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TIMKEN *Tapered Roller* BEARINGS

Tapping an electric furnace in the Timken Steel Mill. Timken controls every process in the manufacture of Timken Bearings from the raw material to the finished product.

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"Cooperation between body builders and the art staffs of these manufacturers has resulted many times in conferring such additional attractiveness upon a car as to greatly increase its sales."

Excerpt from an editorial appearing in MOTOR VEHICLE MONTHLY.

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World's Largest Manufa[illegible] of Automobile Body Hardware

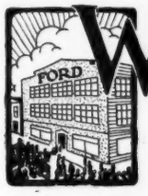
DETROIT U. S. A.

AUTOMOTIVE INDUSTRIES
VOLUME 57 *Philadelphia, Saturday, August 20, 1927* NUMBER 8

Ford's New Model—*Will It Place Him on Top Again?*

Heavy initial demand for new car conceded, but competitors are alert and Dearborn builder must have a flexible organization to hold the ground he regains.

By Norman G. Shidle

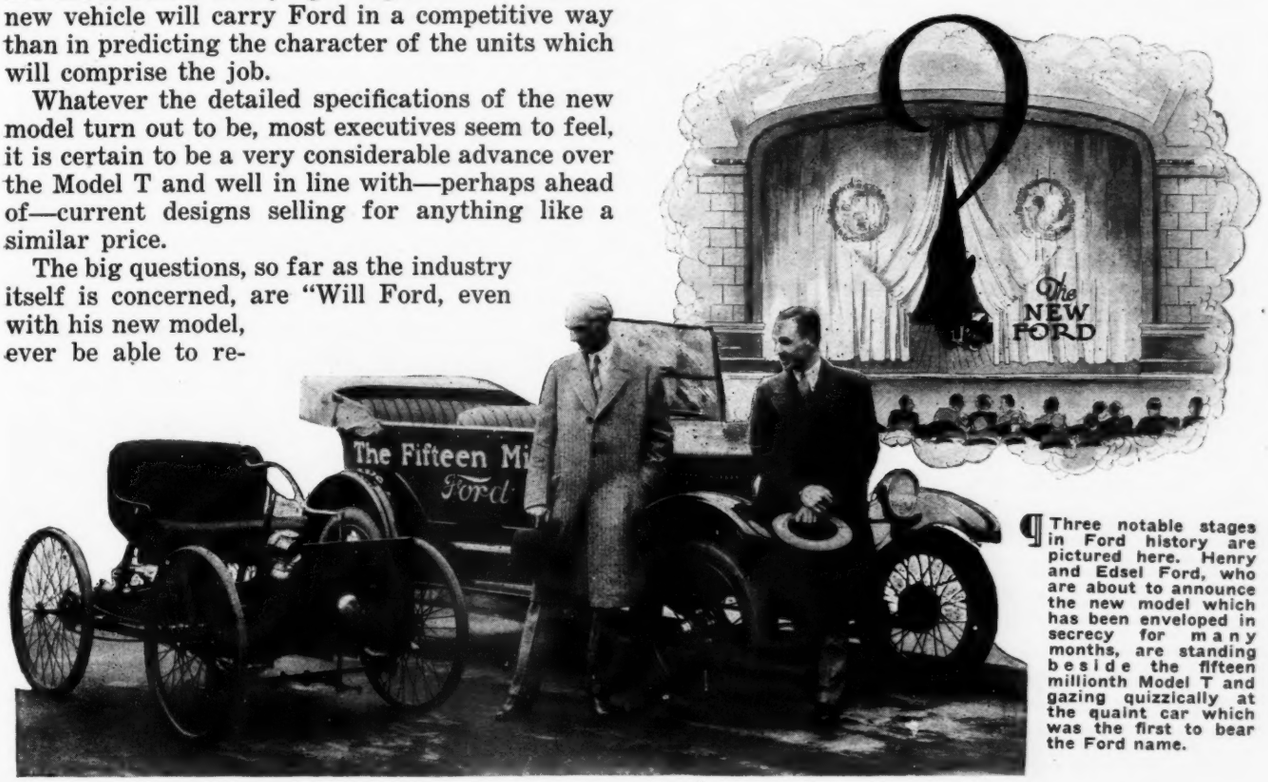


WHILE the general public is speculating somewhat widely as to just what the new Ford model will be like, and while the industry itself is doing considerable guessing along the same lines, most individual executives in automotive manufacturing plants are much busier in trying to figure out where the new vehicle will carry Ford in a competitive way than in predicting the character of the units which will comprise the job.

Whatever the detailed specifications of the new model turn out to be, most executives seem to feel, it is certain to be a very considerable advance over the Model T and well in line with—perhaps ahead of—current designs selling for anything like a similar price.

The big questions, so far as the industry itself is concerned, are "Will Ford, even with his new model, ever be able to regain the dominant position which he once held in the industry? Will he ever produce 50 or more per cent of total output again? Will he ever again reach the heights of sustained production over a long period of time which he experienced before?"

The industry isn't answering these questions with a single voice, by a good deal, but contacts



¶ Three notable stages in Ford history are pictured here. Henry and Edsel Ford, who are about to announce the new model which has been enveloped in secrecy for many months, are standing beside the fifteen millionth Model T and gazing quizzically at the quaint car which was the first to bear the Ford name.

with executives in various parts of the field indicate a rather strong agreement on a few points as regards the commercial and economic aspects of the Ford situation and its relation to the rest of the industry. It seems to be pretty well agreed, for instance, that:

1. The quicker the new Ford model actually is announced and put on sale, the better it will be for the industry as a whole.
2. Ford's future success depends, not so much on what this particular new model turns out to be as on the degree of flexibility which he builds into his new manufacturing set up; upon his ability to make further changes within a year or so without serious interruption of production schedules; upon the methods used in distribution and merchandising.
3. Beauty of lines will have as much to do with the success of the model about to be announced as will improved mechanical performance.
4. For many months, probably a year or more, Ford will have a huge backed-up demand which will be greater than the ability of his production capacity to fill.

Even as regards the points mentioned, a great variety of opinions are expressed in arriving at the conclusions, while on other phases of Ford's future, ideas of different executives vary over an extremely wide range. In all of the discussion now going on, however, the thinking of automotive merchandising students is centering largely around the key phrases, "Flexibility of Production and Marketing Procedure" and "Beauty of Appearance"—with the former recognized as by far the more important item.

There can be little question about the immediate demand for the new Ford. Reports from all over the country indicate that thousands of people have been holding off from buying cars until they get a look at the new Ford. It is common knowledge among students of market analysis, moreover, that the best prospects for a new model of any given make are the old owners of the same make. And there are something like 10,000,000 Ford owners in the United States today.

In the statement made recently on the occasion of his 64th birthday anniversary, Mr. Ford said that he expected to surpass in a much shorter period than 19 years the production record of 15,000,000 cars which he established with the Model T. There is little doubt but that Mr. Ford's expectations will be fulfilled. While the Model T has been in production for 19 years, it must be remembered that about 8,000,000 have been produced in the last five and one-half years—a total of only about 7,000,000 having been made in the preceding 13½ years.

If Ford got back to an average yearly output of 1,200,000 passenger cars—which still would be some 500,000 cars short of his peak—he would turn out 15,000,000 cars in a little over 12 years; at a million a year it would take him 15 years, of course, to reach the Model T total. So it seems quite reasonable to assume that the birthday anniversary prophesy has an excellent chance of coming true.

But even though this be the case, there is not a similar degree of assurance that he will return to the position of building 50 per cent or more of the total output of the industry, while the chance that he ever again will reach the high mark of about 56 per cent, attained in 1921, is even more doubtful.

Two years ago, in our issue of Oct. 29, 1925, to be exact, in an article analyzing the probable commercial trend of Ford business, we quoted an automotive executive as follows:

Change Had to Come

"Some time Ford will have to change his design basically. A new Ford car, designed along up-to-date lines, incorporating the engineering knowledge of the last two decades, must be brought out sometime.

"But the entire Ford organization—production, engineering, sales and service—has been developed on the basis of standardization, **lack of change.**

"Before the Ford idea can be considered as more than an economic experiment, Ford must bring out this new car, produce it *and sell it at the same price as that which he receives for his present model.*

"If he sells the new car for a higher price, he comes into the same area of competition as

Edsel Ford

¶ For nearly 20 years the efforts of the vast Ford organization have been concentrated on the production of one car—the Model T. In that time 15,000,000 of them were built and sold. For many years it outsold all other American cars combined and the huge profits which accrued made Ford one of the world's richest men. Recently, however, its star has been declining. Chevrolet this year has surpassed it in sales. And now it is about to be discontinued in favor of an entirely new model with which the Fords hope to regain the position of dominance which formerly was theirs. The Model T was distinctly the product of the father, but the hand of the son is seen in all of the recent developments which are about to culminate in the introduction of the new design.

any other maker whose price is higher; his potential market is just that much smaller and he would be affected by the same economic factors *in the same degree* as every other maker in that price group."

Today Ford is engaged in making just the changes predicted in that statement; he is modernizing his product, revamping his entire production system and getting ready to use at least some new selling and advertising methods.

This particular executive having called the turn so well before, we sought him out again last week to see what he thought about the Ford future from now on. Here is about what he said:

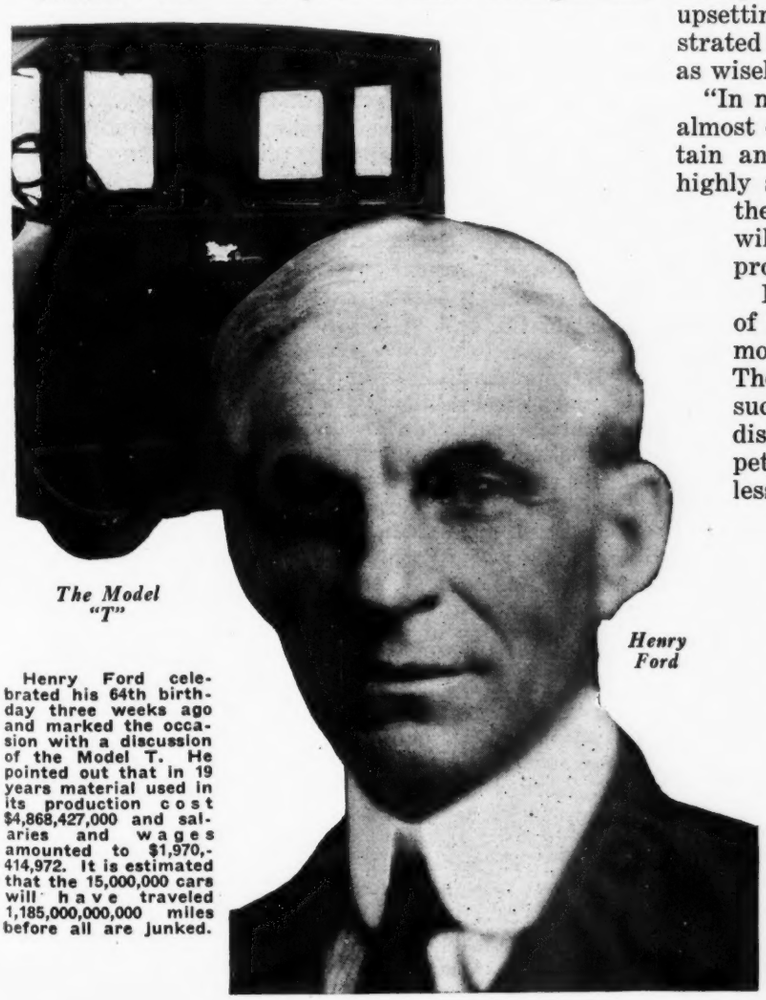
"Talking in similies, while sometimes a bit inaccurate, seems to me to be the best way in many cases to express an idea, so I'll use that method this time.

"An industry often has been likened to the human body—a unit composed of a multitude of individual cells, working together yet each doing an individual job, all of them coordinated with the brain, or directing agency, by a sensory system of some kind.

"Prehistoric men and animals, we are told, had strong, powerful bodies and possessed very dull sensory equipment. Started on one road they could pursue it almost indefinitely, overcoming all obstacles that would yield to sheer strength and power. But their nervous systems were not acute nor sensitive enough to permit rapid reflexes and quick changes of direction or plan.

"Modern man has a highly developed system of nerves and senses; the prehistoric man and the prehistoric animal of the type described have become extinct because they weren't equipped to meet the conditions of a changing environment.

"The automotive industry seems to me to have gone through much the same development. Sheer force of large production on an efficient, repetitive scale served admirably to meet the conditions of the industry some years ago. But in the future the successful concern will be the one which has an organization and a production system generally flexible in character, capable of rather rapid change without great disorganization, mentally and psychologically as well as physically equipped to sense conditions as they change and to change with varying needs as time goes on.



The Model "T"

Henry Ford

Henry Ford celebrated his 64th birthday three weeks ago and marked the occasion with a discussion of the Model T. He pointed out that in 19 years material used in its production cost $4,868,427,000 and salaries and wages amounted to $1,970,414,972. It is estimated that the 15,000,000 cars will have traveled 1,185,000,000,000 miles before all are junked.

Competitors Better Equipped

"It would be going too far to say that Ford is not so equipped. It is certainly true, however, to say that he and his organization are not as well equipped in that regard as are several of his most important and direct competitors. At least one of these competitive companies already has shown its ability to change models quickly without greatly upsetting its production routine and has demonstrated its ability to think and act quickly as well as wisely in a merchandising sense.

"In my opinion, Ford's future progress depends almost entirely on his ability to create and maintain an organization and equipment much more highly sensitized and flexible than he has had in the past. The answer to the Ford question will not be written for at least 12 months and probably not for 24 or more."

It is just this matter of flexibility that most of the marketing students are talking about most in trying to forecast the Ford future. The Model T, they point out, had its greatest success during a period when it had a very distinct price differential over its nearest competitor, and when those competitors had a bit less refined sensory system themselves than they have today. With the new Ford something like $50 higher in price than the old—as is rumored—the price advantage of the Ford product will be considerably less than it is today, although the performance value per dollar may be much greater.

As years go on and Ford gets into large production on his new model, price reductions, of course, are perfectly conceivable, but such reductions even on the new model probably never will give Ford the tremendous advantage which he once had on price alone, when he was the first to conceive and put into operation the idea of quantity production and low price. As pointed out in previous articles, the potency of mere price alone as a sales.

weapon is far less today, for Ford or any other manufacturer, than it was 5 or 10 years ago.

In other words, the new Ford, by and large, will be competing with several other well-intrenched cars chiefly on a design and performance basis. Viewing the problem with that thought in mind, it is interesting to look at the possible result through the eyes of another automotive manufacturing executive who is very close to the whole competitive picture in the low-priced field. This later executive is speculating about like this:

Large Immediate Sale

"Suppose the new Ford model does turn out to be a distinct and obvious advance in design, performance and comfort over any existing cars selling within $50 or $100 of its price. Let us assume for the sake of argument that it does even a little more than was claimed for it in Edsel Ford's statement last week—top speed of 65 m.p.h.; comfortable driving at 50 m.p.h. over long periods; 110 miles in two hours over average roads without overheating or ill effects to the motor; economical in the consumption of gasoline and oil; excellent performance of ignition, cooling and carburetion systems, and so forth. Assume also that it strikes the eye favorably—for as Edsel Ford's statement said, 'We have known from the beginning that this new Ford would be a handsome car.'

"Such a car would unquestionably have a huge, immediate sale. The volume in which it sold might be expected to continue indefinitely—*until some other maker brings out a car equal or superior to it at something like a comparable price.*

"The power and resources of Ford's chief competitors are such that it is hardly conceivable that one or more of them cannot be counted upon to bring out something at least as attractive and perhaps more so than the Ford model before very many months after the announcement of the new Ford. The ability and inventiveness of Henry Ford himself and of the engineers working with him is not for a moment to be questioned. But it is equally certain that Ford doesn't possess the only pair of seven-league engineering boots in the automobile industry.

Others Have Designs Ready

"It is quite conceivable that his principal competitors already have in abeyance designs and models representing some considerable advances over current practice. It is almost as certain, also, that these competitors could put those new designs into production in a far shorter length of time and with much less disruption of their manufacturing programs than has been necessary for Ford in changing over from the Model T to the new car which is to be announced in a few weeks. A six-cylinder car in the $500-$600 price class, for instance, is not at all beyond the range of possibility.

"Then will come the real test."

Other well-informed men throughout the industry tend to agree with this estimate of the situation. Ford must be ready to make further changes from time to time, just as other makers do, if he is to hope to regain and hold his former position of dominance in the industry.

An attempt to standardize on any single model for another 19 years, it is generally thought, would be bound to result in difficulties. Many executives think that should such a plan of standardization on a single model be tried by Ford, however excellent that model might be today, he would find himself by the end of three to five years in about the same position of declining sales as related to competitors as was arrived at with the Model T a year or two ago.

One man who has been close to the Ford organization in the past, voiced the opinion that the Ford production system never again would be tooled up to the exeremely high degree of specialization as it was for the Model T. The president of another car company, not in the Ford price group, is inclined to the opinion that Ford later will have to bring out a moderately-priced six and eight-cylinder car to complete his line and put himself in a position to utilize all of the great resources of the huge vertical industry which he has built.

The Industry's Opinion

The industry in general seems to feel that Ford never again will build 50 per cent of the total cars produced, although one of the closest students of automobile sales trends, whose guess frequently has been right in the past, thinks that Ford is due to come back with a vengeance and to reach and possibly surpass the peaks which he achieved previously with the Model T.

Summarizing a considerable number of opinions gathered from different parts of the industry, the general belief is that flexibility or lack of flexibility of mind and physical production facilities will be the determining factor in Ford's future as related to that of the rest of the industry.

THE standardization of scientific and engineering symbols and abbreviations has been undertaken as a national enterprise under the direction of the American Engineering Standards Committee. The project was launched some four years ago and the American Association for the Advancement of Science, the National Research Council, the Society for Promotion of Engineering Education, the U. S. Bureau of Standards, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers and the American Society of Civil Engineers were made joint sponsors of the activity.

The sectional committee considering the subject consists of 30 members representing 37 national organizations. The society of Automotive Engineers is represented by Joseph S. Ames, R. M. Anderson and E. P. Warner on the sub-committee on aeronautical symbols which has just released a proposed standard.

A PATENT was issued to the Wolseley Motor Car Co. in England recently which covers the use of a cupped spring washer behind bevel gears in drives in which unusual silence is required, such as the drives for overhead camshafts. These washers are said to prevent noises due to the unavoidable inaccuracies.

New *Graham Truck* Has "*Six*" Engine, Four-Speed *Transmission*

Four-wheel hydraulic brakes also offered on new 2-ton model. Price advanced $150. Same type brakes and transmission adopted for 1½-ton job. Cam and lever steering.

By A. F. Denham

WHAT amounts practically to a complete new line of trucks is now in production at the Graham Brothers plant. As previously, the models range from ¾ to 2 tons in capacity. Four-wheel hydraulic brakes, four-speed transmissions and a six-cylinder engine feature the 2-ton model. Four-wheel brakes and four-speed transmission also being used on the 1½-ton models. Cam and lever steering gears are standard on all chassis.

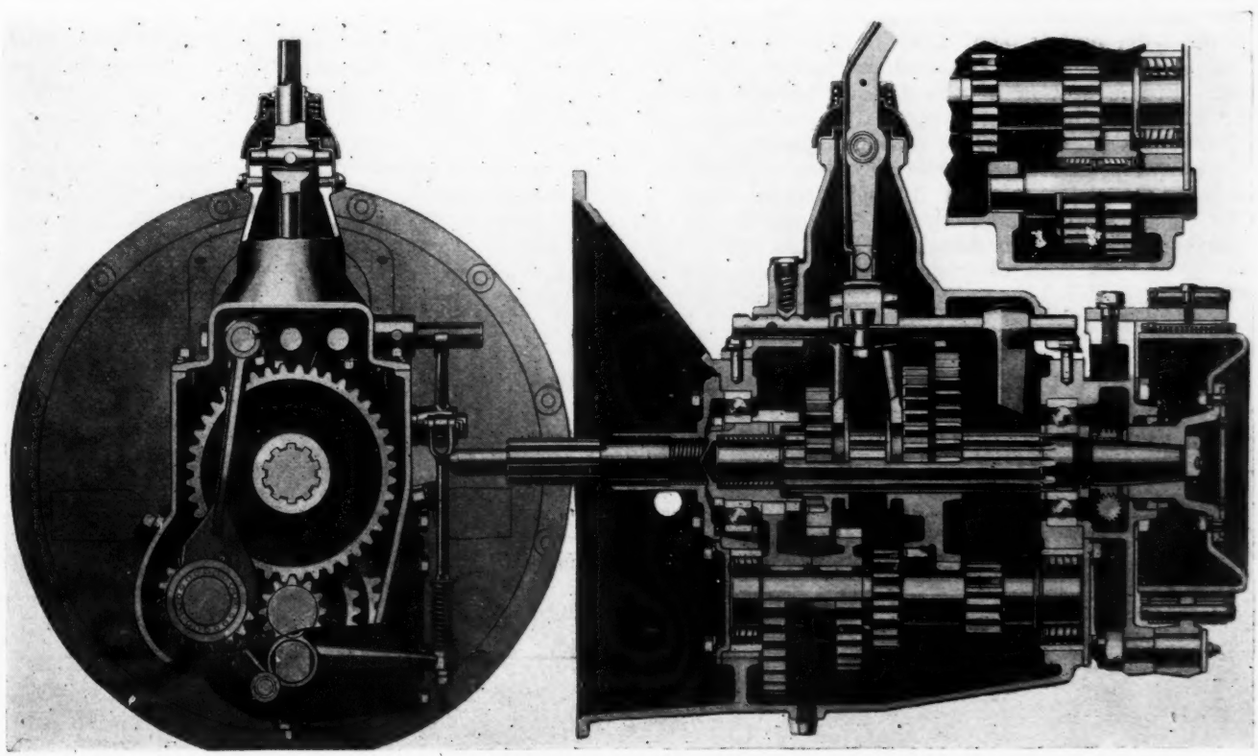
Changes made in the line have materially bettered the performance, while the same reliability is maintained through the use of stronger parts where necessitated by increased stresses. The comfort of the driver has also received attention in redesigning cabs.

Prices remain virtually unchanged, with the exception of an increase of $150 on the 2-ton and $10 on the 1-ton, the latter occasioned through the adoption of eight-ply instead of six-ply 30 by 5 tires.

Three distinct 2-ton chassis models are being offered, a 137 in. and 162 in. model, and a 114 in. wheelbase roadbuilder, the latter being an entirely new model, since Graham Brothers have not built a roadbuilder for over a year past. On the 1½-ton chassis, 137 in. and 162 in. editions are also available, while the ¾-ton and 1-ton models are on 116 and 126 in. wheelbases respectively. These models are all fitted with the improved four-cylinder Dodge Brothers engine. Two-wheel brakes and three-speed transmissions are continued on the two smaller models.

The new six-cylinder engine used in the 2-ton model is the same as that used in the Dodge Senior passenger car, except for slight changes in the manifold, carburetor setting, etc. A governor is added, designed, according to Graham Brothers engineers, not so much to reduce maximum speed of the trucks as to insure against excessive racing of engines without load. A larger truck type fan is also incorporated.

Built in unit with the engine is the single plate clutch and four-speed transmission, of the S.A.E. standard shift type. The main shaft has ten splines, is machined



Left—Rear end view of Graham Brothers four-speed transmission. Right—Sectional view of the transmission showing roller bearing mounting of reverse idler

from nickel steel, and is mounted on ball bearings with a Hyatt roller bearing pilot at the front end. The countershaft and gear assembly is mounted on roller bearings, while the reverse gear is individually mounted with a Hyatt roller on a dead shaft. Gear reduction in low is 6.5 to 1, second is 4.0 to 1, third is 2.08 to 1, and reverse is 7.58 to 1. A six-bolt S. A. E. opening is provided on the right side of the transmission case for power take-offs, such as are used for operating dump bodies, hydraulic pumps, etc. All gears are of alloy steel, heat treated, hardened, and lapped in pairs to insure quiet operation.

Propeller shafts on the standard 2-ton models are of the two-piece type with three Universal Products, ball type, universal joints. On the roadbuilder a single-piece shaft is used, incorporating the same type of universals. Axles on the 2-ton are of new design, with cast steel housing and alloy steel shafts 5/16 in. larger in diameter than formerly. Wheel bearings have also been increased in size, while ring gear and pinion tooth faces have been lengthened.

Lockheed hydraulic four-wheel brakes of the latest design, incorporating an automatic refilling tank surrounding the master cylinder, are used on the 2-ton, as well as the 1½-ton truck. Drums are 16 in. in diameter, with internal expanding shoes taking 2¼ in. lining. On these models an emergency transmission brake has been adopted with an 8-in. diameter, 3-in. width drum.

With the adoption of front wheel brakes, front axles have been increased in section and Reverse Elliott ends are used. Steel spoked wheels are standard on both 1½ and 2-ton models, taking 32 by 6 in. tires all around on the 1½ and on the front wheels of the 2-ton, the latter having 34 by 7 in. rear pneumatic tires. For 2-ton models, dual disk wheels are offered at extra cost, fitted either with 34 by 5 or 32 by 6 in. tires, in either case the same front tire size being used as on the rear and mounted on single disk wheels.

Optional Gear Ratios

Standard gear ratios on the 1½-ton is 5.10 to 1 and on the 2-ton models 5.667 to 1. On the roadbuilder 6.375 to 1 is standard. Optional gear ratios are available. Frame section of the 162 in. chassis models and on the roadbuilder now is ¼ x 7⅛ x 2⅞ in. with 3/16 x 7 x 2⅞ on the 137 in. wheelbase chassis.

A new type of radiator has also been adopted for the 2-ton model. It is of the fin and tube construction with oblong section tubes, said to increase durability, especially in freezing weather. With this radiator a new shape of nickeled shell is used, the higher radiator raising the hood and enhancing external appearance.

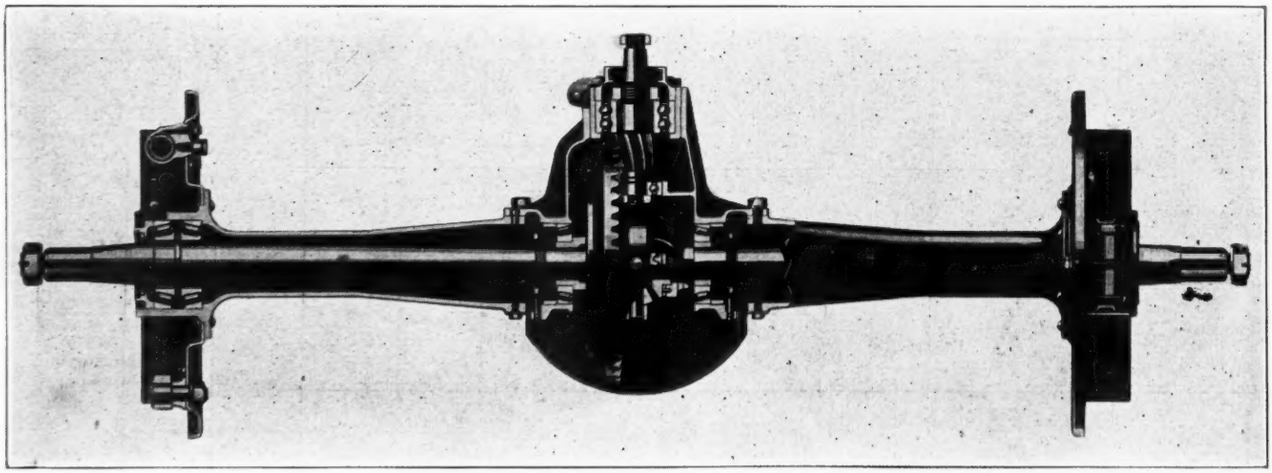
Differing chiefly from the 2-ton in that the new four-cylinder engine recently adopted is used, the 1½-ton model is also fitted with four-wheel brakes, four-speed transmission and heavier axles. Specifications of these units are the same as for the units used on the 2-ton. Other differences between the two models are in the number of leaves in the springs and tire sizes.

On the ¾-ton and 1-ton models the chief changes are in the adoption of a cam and lever steering gear, manufactured especially for Graham Brothers by Ross Gear & Tool Co., the use of heavier section front axles, adoption of eight-ply instead of six-ply pneumatics on the 1-ton and the offering of a special gear ratio of 4.25 to 1 on the 1-ton model.

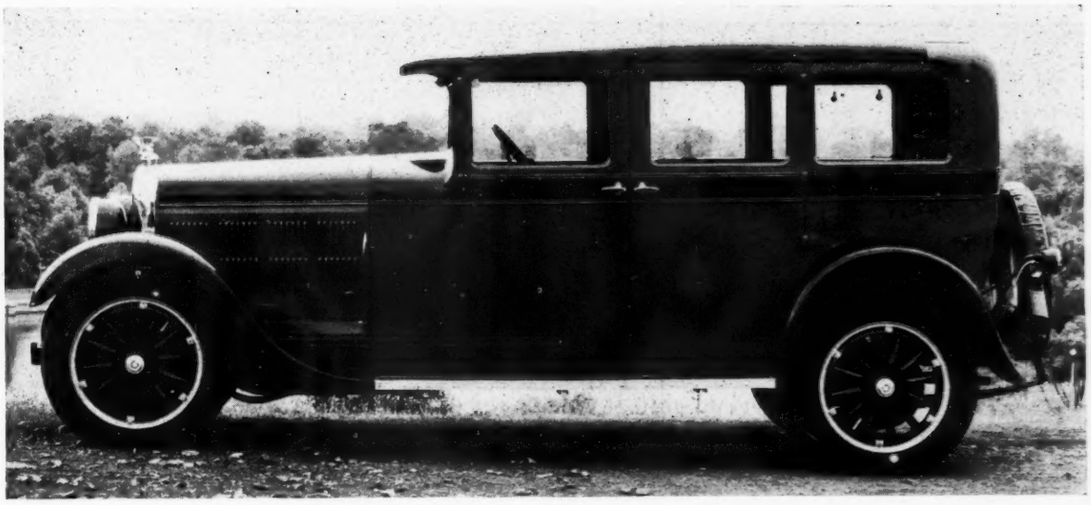
A number of changes have been made in the cabs to increase comfort. Cushions are now air bound. A one-piece windshield has been adopted on all cabs, and the front of the tops lowered as a result. Seats are also somewhat lower than formerly. All models are fitted with cowl ventilators, rear view mirrors, and automatic windshield wipers. Front bumpers, integral with the frame, are furnised on all except the ¾-ton model. Complete body lines similar to former offerings are available.

OPERATION of cold-storage motor trucks over long-distances for the handling of butter, eggs, meat and other perishables to coastwise markets from their points of origin in the hot interior valleys has been established by the Golden Gate Motor Transportation Co. of San Francisco. Two of the cold-storage truck units have been installed, each consisting of a Fageol truck with van body carried on 10 wheels and a Reliance trailer, also with van body and carried on 10 wheels.

The cold-storage trucks have four double wheels on the rear and two single wheels in front. They are equipped with six-cylinder, 120 hp. Waukesha Ricardo-head motors. Westinghouse air brakes operate from the driver's seat on both truck and trailer, with compressed air provided by an auxiliary gas-engine generator plant, which also supplies lights for the exterior and interior of truck and trailer and current for the motor of the Kelvinator refrigerating plant, the latter being regulated by a thermostat so that inside temperature is automatically maintained at 34 deg. The interior of the truck body resembles a cold-storage room with traveling hooks for the hanging of meats.



The rear axle of the 1½ and 2-ton Graham models embodies a straddle mounted bevel pinion



Gardner five-passenger Series 85 sedan

Gardner Concentrating on *Eights;* Four *Models* in Line

"75" and "85" are introduced to supplement two 8-cylinder models previously in production. Prices range from $1,475 to $2,295. Fedco system is adopted.

GARDNER MOTOR CO. for 1928 announces a line consisting entirely of eight-cylinder models at prices ranging from $1,475 to $2,295. The latest additions to the line are Models 75 and 85, which supplement Models 80 and 90, previously in production.

Like other cars of the Gardner line, the Model 75 uses a Lycoming engine. The bore and stroke is 2¾ by 4¾ in. The N.A.C.C. horsepower rating is 24.2 but the actual brake horsepower at 3200 r.p.m. is 62. The wheelbase is 122 in. Both body models of the "75" are equipped with gasoline strainer, thermostat, snubbers, gasoline gage on dash, stop light, automatic windshield wiper, Griffin radiator ornament, heat indicator on dash, and rear view mirror.

The interior is trimmed in walnut and upholstering is of Chase mohair with French type pleating. Butler silver-finished hardware is used. The walnut strip is extended to the instrument board, where there are walnut panels. Four-wheel brakes of the mechanical inclosed type, balloon tires, tilt ray headlights, remote control door locks and indirectly illuminated instrument board are among other features of this model. The finish is in two-tone lacquer with nickel-plated radiator.

The "85" is offered in five body styles. The engine has a bore and stroke of 2⅞ by 4¾ in. and to handle the increased power newly designed axles of very heavy construction are used. Wheelbase is 122 in. The closed models are upholstered in Chase Velmo with artistically patterned seats and backs. The sides and top are in solid colors. The silk curtains, toggle grips and floor carpets are all in the same color to harmonize with the balance of the interior. The equipment of the Series 85 cars includes practically all items supplied on the 75 and 80 models.

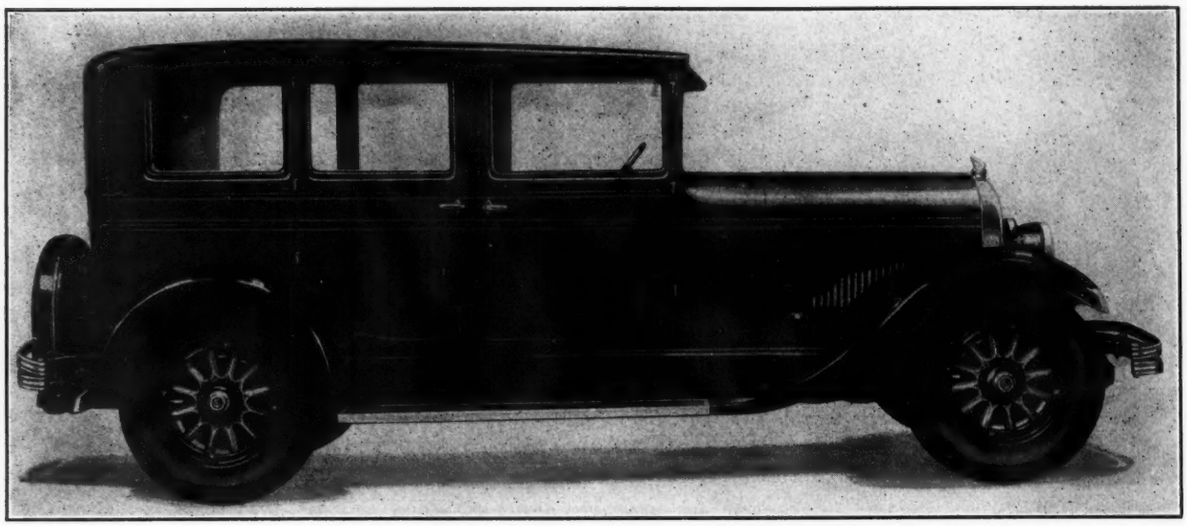
Series 80 cars continue without mechanical changes. However, equipment that had previously been designated as de luxe is now standard.

The Series 90 Gardners may be had with four-speed transmissions at an extra charge of $100. Powered with a 3¼ by 4½-in. engine developing 84 b. hp. at 2900 r.p.m. these models are the most powerful in the line.

All models of the Gardner are now protected with the Fedco theft-proof numbering system with loss-of-use insurance that pays $5 a day for the first 30 days after a car is stolen.

Following is a complete list of models and prices:

SERIES 75	
5-passenger sedan	$1,490
5-passenger sport coupe	1,475
SERIES 80	
5-passenger sedan	$1,795
4-passenger victoria	1,745
5-passenger sport coupe	1,745
4-passenger roadster	1,595
SERIES 85	
5-passenger sedan	$1,895
5-passenger, 4-door brougham	1,895
4-passenger victoria	1,845
5-passenger sport coupe	1,845
4-passenger roadster	1,695
SERIES 90	
5-passenger sedan	$2,295
5-passenger, 4-door brougham	2,295



The new Chrysler "72" royal sedan which lists at $1,595

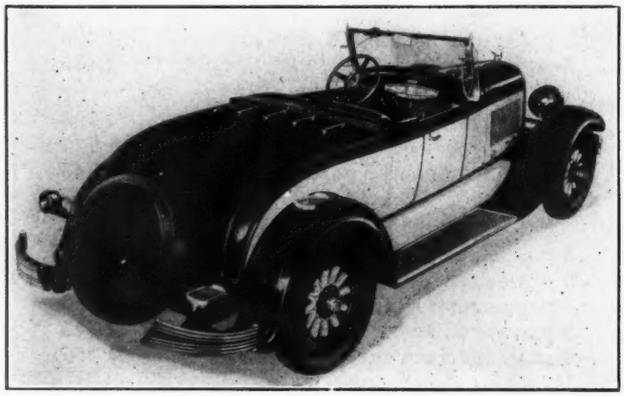
Chrysler "72" With *Larger* Engine Replaces Model "70"

Piston displacement increased from 218 to 248 cu. in. New powerplant develops 75 b.hp. Bodies are lengthened.

A NEW, larger engine and larger bodies characterize the model "72" which has been announced by the Chrysler Sales Corp. to replace the former model 70. Seven body models are being offered at present. Prices are the same as for the Model 70 with the exception of a $50 reduction on the crown sedan.

Rubber four-point engine supports are used on the new engine, which has a bore and stroke of 3¼ by 5 in., a counterweight seven-bearing crankshaft and a piston of the Invar strut type with five rings. Rubber shock insulators are also used for the spring shackles.

Due to the larger engine, which develops 75 b.hp., performance has been materially increased, a top speed of 72 m.p.h., as indicated by the model designation, being claimed, as well as an acceleration of from 5 to 25 miles in seven seconds. Larger bodies with 5 in. more legroom and saddle spring cushions contribute toward increased comfort, while appearance has been enhanced, aside from the use of longer bodies, through a higher and deeper radiator, individual headlight stanchions, new instrument panel and color schemes.



New Chrysler "72" roadster with rumble seat. The "Red-Head" high compression motor is standard on this model

As on the 52 and 62 models, the Chrysler "Red Head" high compression cylinder head is standard on the roadster model, and is available on other models at additional cost.

In design the new engine follows previous Chrysler practice and represents a combination of features taken from the Model 70 and the Imperial 80. From this latter model are derived the counterweighted crankshaft design and the rubber engine insulation. With the increase in bore from 3⅛ to 3¼ in., and stroke from 4¾ to 5 in., representing an increase in piston displacement of from 218.59 to 248.9 cu. in., rated horsepower now being 25.35, the crankshaft has been increased in size and weight to take care of the added power. To offset the added weight the shaft has been equipped with counterbalances bolted to the sides of the crank cheeks. As a result it has been possible to use the same main bearing sizes as in the model 70.

Connecting Rods Longer

Connecting rods are longer in the new engine, now being 10 7/16 in. from center to center, representing an increase of 7/16 in. While crankpin bearing sizes, with die cast bearings in the rod, are of the same dimensions as formerly, piston pins are slightly larger in diameter, which is now ⅞ in., with the length also increased 1/16 in. to 2 ⅞ in. An interesting piston design is used. It is of the aluminum alloy Invar strut type, but has five rings, four of which are of the compression type, the lower ring being an oil scraper, in a radially drilled groove. The four compression rings are L-shaped, and the first and third piston land is

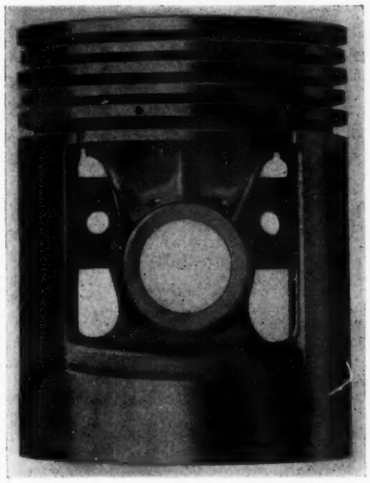
slightly smaller in diameter than the others, the flanges of each two adjoining piston rings meeting over this land. This design is said to have materially increased compression.

Larger inlet valves also contribute to greater power, these now being 1 9/16 in. in diameter, while the 1 7/16 in. exhaust valve head diameter is retained. As formerly, stems are 11/32 in. in diameter.

A crankcase ventilating system is also incorporated. Air is taken in at the front end of the engine through an air cleaner and is whirled about in the crankcase by the rotation of the shaft. At the rear left of the crankcase is a cored hole in the shape of an inverted L, to the horizontal outlet of which a pipe is attached, leading downward and backward. The forward motion of the car creates a suction in this pipe and causes free circulation of filtered air in the crankcase. As formerly, an oil filter is also used, as well as an air cleaner on the carburetor air intake.

Increased cooling capacity has been obtained through the use of a higher and deeper radiator. Water capacity now is 4¼ gallons.

An interesting service feature on the "72," used in connection with the checking of ignition and valve timing, is an inspection hole drilled in the cylinder head. By removing a pipe plug from this hole, a height gage can be inserted to determine when the piston is at top dead center.



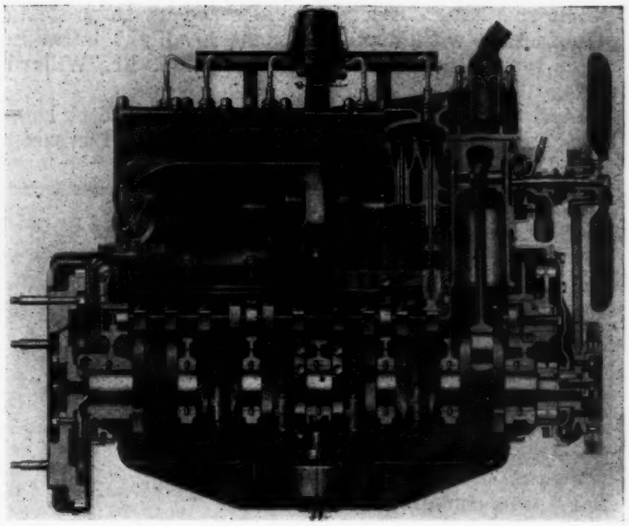
Pistons in the "72" are of light aluminum alloy with Invar steel strut and have five rings of gray iron

A change has been made on the flywheel in that the teeth are cut in a steel ring shrunk on the flywheel rather than in the flywheel proper as formerly.

While a single plate clutch is again used, this is a new design, with the facings riveted to the plate, instead of being woven in as formerly. Outside diameter of the facings is 9⅞ in., as against 9⅝ in. formerly. A rubber cushioning disk similar to that adopted on the "62" has also been incorporated on the clutch of the "72."

Transmission gears are slightly larger than formerly. Gear ratios are unchanged and the general transmission design is the same as formerly.

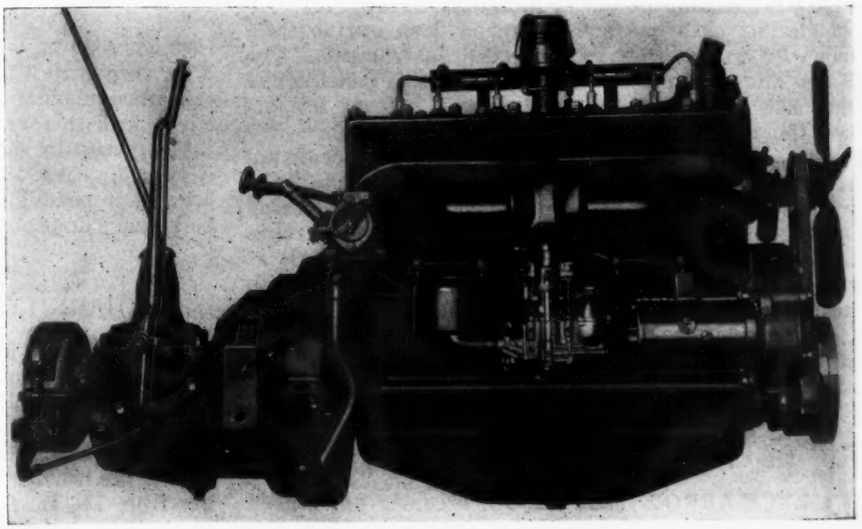
Rear axles are similar to those used on the Model 70, the main changes being in increasing the size of the drive gear, this now being 10 in. in diameter as against 9½ in. on the "70," and 1⅜ in. wide, an increase of ⅛ in., with the pinion size increased proportionately.



Sectional view of Chrysler "72" engine. The drop-forged crankshaft which weighs 72 lb., is now counterweighted, as in the Imperial "80"

Brakes, steering gear, and front axle remain virtually unchanged. The frame, however is 9½ in. longer than the 70, now being 170 in. over all. Other frame dimensions are unchanged. With the longer frame, longer and wider springs are used both front and rear. The 40½ by 2 in. front spring represents an increase in length of 5½ in. and ¼ in. in width. Rear springs are 6⅛ in. longer, now being 57¾ in. between spring eyes. The width is unchanged. Rear springs on all models except the sedans have had one more leaf added, while the increased front spring width has enabled a reduction from 10 to 9 leaves. The new springs are of the dry leaf type, lubrication not being recommended. The rubber shock insulators adopted in place of the metal shackles are mounted in malleable brackets.

As formerly, 18 in. wood wheels with 30 by 6.00 in. balloon tires are standard. Engine and chassis accessories include a Ball & Ball carburetor fitted with an electric heating element controlled by a button on the steering column bracket, and taking gas from a 16-



View of right side of "72" powerplant. Bore and stroke is 3¼ by 5 in. as compared with the former 3⅛ by 4¾ in.

gallon fuel tank. Electrical units are of Delco-Remy manufacture with double filament headlight bulbs in drum type headlamps, and a 100 amp. hr. Willard storage battery.

Improvements in both appearance and comfort have been achieved in the new body designs. Increased length and a higher radiator have made for better streamlining. Two-tone color schemes with double belt moldings are used for the exterior finish on the closed cars. On the roadster a single reddish striped molding separated the two exterior colors, with another stripe at the bottom of the body panels, and two vertical stripes, one on either side of the wider doors. Exterior appearance on the roadster has also been bettered by having the rear deck entrely flat, eliminating the former rise at the junction with the top.

Inside the closed cars there is a new mohair upholstery in two-tone finish on the royal sedan—and form-fitting or saddle spring sets have been incorporated. On the sedans armrests are used in the rear quarters, these being fitted with ash trays and metal hand grips in harmony with other hardware fittings, in place of the usual assist cords. The metal moldings below the window sills in the doors are pointed downward in the center, door panel designs following this curve.

Narrower front body pillars are also used as well as cadet visors and colored window reveals. A feature of the new drum type headlights is the mounting, each lamp being mounted on an individual vertical nickeled stanchion, and tied together and to the fenders by the usual front cross bar.

A new instrument panel, indirectly lighted, includes an electric dash gasoline gage and dash engine thermometer in addition to the usual instruments. The Fedco number plate is mounted above this panel, while the choke and manifold head control buttons are below the panel.

The steering column is fitted with a coincidental steering and ignition lock in the column bracket, the windshield wiper control and fumer button also being mounted on this bracket. Spark control and throttle levers are mounted on the steering wheel, as well as the light control operating all positions, including both headlight beams and auxiliary headlight bulbs.

A combination stop and tail lamp is included in the standard equipment, as well as Hassler snubbers all around.

Chrysler "72" Body Models and Prices

Following is a list of Chrysler "72" body models and prices:

2-4 pass. roadster	**$1,495**
2-4 pass. coupe	**1,545**
4-pass. coupe	**1,595**
5-pass. close-coupled sedan	**1,595**
5-pass. royal sedan	**1,595**
5-pass. crown sedan	**1,745**
2-4 pass. convertible coupe	**1,745**

Pierce-Arrow Changes

PIERCE-ARROW MOTOR CO. recently announced that radius rods have been engineered into the design of its X-A 2-ton and X-B 3-ton trucks and 3-ton tractor unit to provide better load-carrying ability, better alignment of the driving mechanism with the rear axle, long axle life and improved braking conditions.

The rods are of tubular construction to give great strength with little weight. The front end of each rod is joined to the front support of the rear springs and the other end is joined to the upper spring saddle. Each end is of ball and socket design, insuring complete flexibility and adjustment for wear.

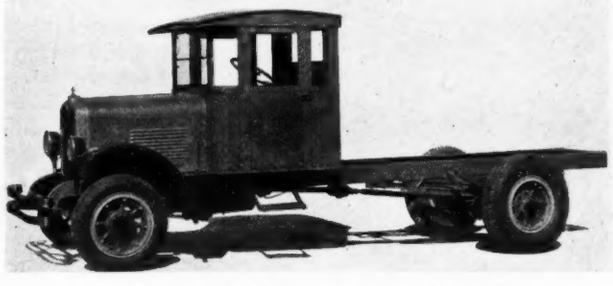
Another change made in the heavy duty truck line is the addition of oil filters. This filter is of Pierce-Arrow design and is said to greatly increase the life of oil.

Six-Cylinder Indiana Truck

A RECENT addition to the Indiana line of trucks is model 627, a six-cylinder, 3-ton, high-speed job suitable for oil or gas tank work or as a general cargo truck. Standard wheelbase is 168¾ in. with a special wheelbase of 216¾ in. available. Body allowance is 2000 lb. Loading space back of seat is 11 ft. 6 in. for the standard wheelbase.

The engine has 3¾-in. bore, 5-in. stroke, valves in head, plain tube carburetor, battery ignition and fin and tube type radiator with removable core. A dry plate clutch is used and unit transmission providing four forward speeds and reverse with 5.35 reduction in low is fitted. The tubular propeller shaft has three metal universal joints.

Spiral bevel drive is employed with semi-floating axles. Double internal brakes are fitted to the rear wheels. The cam and lever steering gear is operated through a 20-in. wheel. The frame is channel section, 7 in. deep with 3-in. flange of 5/16-in. stock. Springs are silica manganese steel, 40 in. long in front and 50 in. long in rear.



Indiana model 627 3-ton speed truck

Equipment includes Moto Meter, crown front fenders, electric lighting and starting equipment, nickel-plated drum type headlights, air cleaner, speedometer, electric horn and bumper.

Blackhawk Hydraulic Jacks

THE Blackhawk Manufacturing Co., Milwaukee, has recently developed a new line of hydraulic, oil power jacks which includes all sizes from a compact 1½-ton model to a 75-ton industrial jack. Among the products are a Tourist jack designed for ordinary road use on all but the heaviest cars, the Hi-Way which has a total lift from 7⅜ in. to 18 in.; the motorcoach and motor truck jacks designed for heavier service and the Heavi-lift jack designed for 12 tons.

Just Among Ourselves

More Emphasis on Foreman Training

FOREMAN training in particular and industrial education in general is getting more attention from important automotive executives now than ever before. The vital interest of so great a factor as General Motors, for example, is symbolized by the activity of the General Motors technical college at Flint, which bids fair to become one important focal point for study and analysis of these questions. Theories and methods of foreman training are numerous and differing in character, but gradually, through the work of many men during the last decade or so, those methods which are permanently effective are coming to the fore.

* * *

Psychological Phases Better Understood

NOT the least of the problems connected with successful foreman training in any given company is that of getting operating executives to feel that active interest in and personal study of the work is a legitimate and permanent part of their regular functioning. The idea of foreman training as something for which the regular executives can write out a prescription and then leave to the efforts of some outside agency is gradually passing into the discard. Passing also is the thought of foreman training as merely a "course" of some kind; as a matter more or less segregated and not much dependent upon the ordinary everyday functioning of the plant. Successful foreman-training activities usually have been based on a groundwork of confidence between management and foremen previously established through the routine relationships in everyday work. The fundamental importance of the psychological phases of establishing and carrying on foreman training is being better appreciated as time goes on—and the resultant activities are bringing better results as a consequence.

* * *

Many Are Interested in List of Books

WE never realized before how many readers of this page were interested in books. Since we spoke the other week about a list of 100 books prepared by Antioch College at the request of J. H. Hunt for a list of books covering subjects on which an educated man would feel this need of information the requests for that list have been pouring in every day. Originally we had a few carbon copies of the list run off with a feeling of assurance that they would be sufficient to meet the demand. Now we've got the mimeograph working—and will be glad to keep it working as long as the requests continue. Only thing we are hoping for as a result is some comments about the list from those who receive it, as we must confess to an overwhelming interest in the reading habits and purposes of people in general and of automotive men in particular.

* * *

Retail Financing on an Even Keel

RETAIL financing seems to be running along a pretty even keel these days as compared with the hectic times of a year or two ago. Not all manufacturers are satisfied yet with the rates they are able to offer the public in comparison with those of some of their competitors who control financing organizations of their own, but even those difficulties, it is believed, will be overcome in the course of a year or so. A finance company with the common backing of a group of independent manufacturers even might not be outside the realm of future possibility. One manufacturing executive says that more of his dealers are handling their own paper today than ever before and that the rate differential between the various methods of financing now in existence doesn't operate as much of a sales factor one way or the other. In any case, it is doubtless a good thing for the whole industry that new models and novel designs instead of arguments about financing rates and terms are getting the heavy emphasis in car merchandising today. More cars will be sold because of performance, appearance and design in the long run than on financing terms.

* * *

Capitalizing Reputation of American Design

FOLLOWING a good many months of talk about European trends in American design and American trends in European design, it is interesting to note the selection of the term "All-American" in naming the new Oakland. With the steady increase in export sales of American-built cars and the dominating position which cars built and designed in this country now hold in numerous world markets, there seems to be sound reason behind the idea of capitalizing the fact that a car is of all-American parentage. American-built cars for a long while have given at least as great and almost certainly greater dollar for dollar value than those built anywhere else in the world; the buyer of an American-built automobile today gets more for every dollar he invests than would have been thought possible 15 years ago. The term all-American seems a particularly happy one to attach to a car at this time.
—N.G.S.

Automotive Industries
August 20, 1927

Deterioration *of* Rubber Lessened *by* Adding Color

Compound treated with black coloring is found to stand up under sunlight much better than uncolored material. Red not so effective as black. Bureau of Standards makes tests.

IT IS generally known in the industry that light and heat have deteriorating influences on rubber, and it is also realized that the composition of the compound has much to do with the rapidity with which it perishes. But the subject is a very complicated one and there has been comparatively little data available on it, hence it is gratifying that the Bureau of Standards should have taken it up. In Technologic Paper No. 342 of the Bureau, "Aging of Soft Rubber Goods," by R. F. Tener, W. H. Smith and W. L. Holt, are described tests on samples of four different compositions, each composition having been subjected to three different degrees of curing, to determine the effects of (1) outdoor exposure; (2) outdoor exposure with light excluded; (3) laboratory storage; (4) outdoor exposure under glass; (5) outdoor exposure under glass in a vacuum; (6) outdoor exposure under slightly colored glass in a vacuum; (7) dry air at 70 deg. C.; (8) air humidified with water vapor at 70 deg. C.; (9) air at room or normal humidity at 70 deg. C.; (10) oxygen at 70, 80, and 90 deg. C.; (11) commercial nitrogen at 70, 80 and 90 deg. C.

Compounds and Cures

What is referred to as the A compound consisted of 90 per cent by weight of pale crepe rubber and 10 per cent sulphur, cured for periods of 2¼, 3¾ and 4¼ hours at 287 deg. Fahr. Compound B, which was light brown in color, consisted of 83 per cent by volume of smoked sheets, 1.47 per cent of sulphur, 0.25 per cent of diphenylguanidine, 0.55 per cent of zinc oxide and 14.73 per cent of whiting. This compound was cured for 20, 30 and 50 minutes at 287 deg. Fahr.

Compound C consisted of 82.45 per cent by volume of smoked sheets, 2.21 per cent of sulphur, 0.80 per cent of litharge, and 14.54 per cent of whiting. It was gray in color and was cured for periods of 15, 25 and 50 minutes at 287 deg. Fahr.

Compound D, which was black in color, consisted of 60.41 per cent of smoked sheets, 0.41 per cent of hexamethylene-tetramine, 1.74 per cent of sulphur, 1.92 per cent of zinc oxide, 10.75 per cent of gas black, 6.03 per cent of mineral rubber, 3.80 per cent of palm oil and 14.94 per cent of reclaimed rubber. This compound was cured for 25, 50 and 90 minutes at 294 deg. Fahr.

The time and temperatures of curing the A and D compounds were selected to give an undercured compound, one of maximum tensile strength, and an overcured compound. Compounds B and C were also subjected to three different cures each. The three cures are designated by the numerals 1, 2 and 3.

The effect of outdoor exposure was determined by suspending samples in a vertical position on a rack, with the largest surfaces of the samples facing north and south. The samples were placed on the rack during November, 1924, and their condition at varying intervals until March, 1926, is shown in curves in the paper.

A similar series was placed in an open-end box on the roof. The interior of the box was blackened, and a black cloth was placed over each end to exclude light but allow circulation of air. The temperatures of the air in this box and of that surrounding the samples under outdoor exposure were taken at intervals and found to be practically the same. The time of exposure for this series covered the same period as the series exposed to outdoor conditions.

The laboratory storage test was carried out in a filing cabinet, the ends being closed with black cloth, as in the previous test. The period of aging was the same as for outdoor exposure.

Samples of the same rubber compounds were placed in evacuated glass tubes and exposed on the roof from June, 1925, to May, 1926. The tubes were approximately 2.5 m. long, 3.5 cm. in diameter and 2 mm. thick. An absolute pressure, which was never greater than 5 mm. of mercury, was maintained in the tubes in the following way: The open end of each tube was closed by a special rubber cap which gripped the outside of the tube for a distance of about 3 cm. A capillary glass tube passed through the cap to a container of mercury. The vacuum was produced by the safe of a pump which was connected to the mercury container. The samples in each tube were joined together and were prevented from touching the inner surface of the tube by paper clips. At the beginning of the exposure sulphur bloomed from the samples and collected on the interior of the tubes in such quantities that it was necessary to remove it occasionally during the first four months. After this the tubes remained clear. In this test an effort was made to prevent the effect of oxygen and determine the effect of sunlight.

Vanished Tubes Used

Samples were also exposed in similar tubes coated with a spar varnish containing 3.6 mg per cc of an oil-soluble yellow dye. It was hoped in this way to exclude some of the ultra-violet light or light of short wave lengths. Special transmission measurements were made on samples of the clear and varnished glasses, but the similarity of the results obtained in exposure tests does not warrant drawing any conclusions from the specific characteristics of the glass.

For a direct comparison with these results samples were exposed in open glass tubes, both clear and coated with the varnish, respectively. This comparison of results from samples in a vacuum and under glass, and in air and under glass, should give evidence as to the effect of oxygen on the deterioration of rubber goods, since all the other factors were approximately the same.

For the test in dry air at 70 deg. C. the samples were

placed in a container in an oven. Air from a pressure tank was passed very slowly through the container after having been dried by passing through sulphuric acid and calcium chloride. For air of normal humidity, or the humidity prevailing in the oven at the time the tests were made, the usual accelerated aging test was used; that is, by hanging samples in circulating air at 70 deg. C. in an electric oven..

The above test was also carried out in humidified air. This was produced by placing an open pan of water in the oven. A comparison of the results of the above tests in dry air and in air containing different amounts of water vapor should give the effects of moisture on the deterioration of rubber at this temperature.

Effect of Oxygen

Considerable work has been reported on the effect of oxygen on rubber compounds at various temperatures and at increased pressures but very little data have been published on the tensile properties of rubber compounds when exposed to oxygen at various temperatures and at normal pressure. Such data should be interesting and valuable in the study of the aging properties of rubber. In this investigation tests were made at 70, 80 and 90 deg. C. An apparatus similar to the one used for dry air, except that the drying train was omitted, was employed for these tests.

A comparison of results of tests in oxygen at 70, 80 and 90 deg. C. should show the effect of an increase in temperature on the rate of deterioration. A comparison of the results of tests in air and oxygen at 70 deg. C. should show the effect of increasing the concentration of oxygen. A comparison of the results of tests in oxygen at the three temperatures given above with those in nitrogen at the same temperatures should show the effect of oxygen on the rate of deterioration.

In order to avoid the effects of oxygen and to determine the effect of heat, samples were maintained in an atmosphere of nitrogen at various temperatures, the apparatus used being the same as for oxygen.

It is generally recognized that oxygen plays an important part in the deterioration of soft rubber goods, and the results of these tests bear out this belief. At the same temperature of 70 deg. C. the rate of deterioration was greatest in oxygen, least in nitrogen and intermediate in air.

All compounds deteriorated more rapidly when exposed to light, but not all were affected to the same degree. The presence of light had little effect on the rate of deterioration of the D compounds, but had a very marked effect on the B compounds.

Hard, Brittle Coating

Deterioration took place in the absence of air when samples were exposed to sunlight. Examination of these samples showed that a hard, brittle coating was formed on the surface of the samples, particularly in the cases of the A and B compounds. This coating, when once formed, seemed to decrease the rate of deterioration. The coating was insoluble in acetone, benzine and other common organic solvents. It contained more combined sulphur than the interior portion of the sample, which was still elastic.

Samples exposed in vacuum tubes were photographed when under a slight tension, and the presence of the coating was shown in the photographs by cracks. Apparently the A3 and B3 stocks were most affected. No checks were apparent in the D compound, and the C3 stock showed only a slight checking.

The C compound was probably the most sensitive to heat, particularly C3, which was affected at all temperatures. The deterioration was probably a result of continued vulcanization, as litharge is known to be an active accelerator at comparatively low temperatures. The B compound was most resistant to heat. There seemed to be a critical temperature between 80 and 90 deg. C. where all the compounds were noticeably affected.

The effect of heat is also shown in the presence of oxygen, where the rate of deterioration increased greatly when the temperature was successively increased from 70 to 80 to 90 deg. C.

The effect of the degree of vulcanization was most marked in the A compound. It affected the deterioration to a considerable extent in the C compounds, and to a less extent in the B and D compounds. In general, the intermediate cures of the B, C and D compounds aged better than the other cures though there were some exceptions. The under-cure of the A compound deteriorated much less rapidly than either of the other cures.

There was a marked difference in the rate of deterioration of the B compound in the presence and absence of sunlight, while in the case of the D stock there was little difference. In order to determine if any of this could be attributed to color, to one batch of the B compound was added 3 per cent of red iron oxide, and to another 2 per cent of carbon black. The three compounds, one without addition of coloring, one red and one black, were cimultaneously exposed to sunlight for six months and tests made at intervals of two months to determine the deterioration of each.

The results show that during this period the rate of deterioration of the normal uncolored compound was about five times as great as that of the black and about twice that of the red. The quantities of coloring materials added to the compounds were not sufficient to affect appreciably the physical properties but exposure to light showed that the aging properties were greatly changed.

SPEAKING at the Colonial Conference held in London some time ago, Sir Samuel Hoar, Secretary of State for Air, discussed the problem of how far civil aviation might be used to further the development of colonial territories. He emphasized the necessity for an Imperial air policy which would be based upon the combined efforts of the mother country, the dominions and the dependencies. With regard to the British policy, it was suggested that it was intended to make civil aviation self-supporting at the earliest possible moment and to give every incentive to the Imperial Airways Co. to free itself from dependence upon Government subsidies. Sir Samuel stated that in the last five years the running costs of the Imperial Airways machines had been reduced from 4s. 2d. to 1s. 10d. per ton-mile.

Definite advance had also been made, he said, in the development of a heavily laden and comparatively slow machine, which might be termed an "air tramp," which was more economical for the transportation of goods than a passenger-carrying machine. Sir Samuel suggested that the cost of running an air service might be reduced by making the aeroplane an instrument of varied services, such as crop spraying and forest surveying. He expressed the hope that the Government of the Straits Settlements might consider the question as to whether Singapore could not be utilized effectively as an air junction between Europe, India, and Australia. Three important aspects of aviation were the provision of landing grounds, cooperation in meteorological service, and the improvement of wireless facilities.

Trans-Atlantic Airplane Service—

THERE is no longer any question about the eventual development of transoceanic airplane service on a regular commercial basis. That is one of the things assured for the future. The question that remains is, "How soon?"

Alcock and Brown, Read, Scott, DePinedo, Cobham, Lindbergh, Chamberlin, Byrd, Maitland and Hegenberger, and others, have demonstrated that the modern airplane is quite capable, under favorable conditions, of flying the long and dangerous routes which a few years ago could be traversed only by floating vessels.

No one any longer doubts, in the light of recent events, that "flyings" over these routes with passengers and freight will some day be conducted with as much safety and regularity as steamship passages at present. But to bring to that stage the development which has had such an auspicious start will require time.

How much time?

"The first regular transoceanic service will probably be inaugurated five to 10 years from now," was the opinion expressed by Lindbergh shortly after the completion of his memorable one-man, non-stop flight from New York to Paris.

Commander Byrd landed on French soil from the United States with the conviction that regular commercial service by airplane across the Atlantic, in winter as well as summer, would become an established fact in 10 years.

Numerous other aeronautic experts and public officials, to whose utterances the public attaches due weight, have given it as their belief during the last few months that such service has been proved feasible and is imminent.

But 10 years, after all, is a very short space of time in which to perfect and get under way such a stupendous project as a transoceanic air transport system, even in this age of lightning-like scientific progress, and it is more than likely that we shall wait longer than that before we see dependable commercial service rendered across the Atlantic in both directions by any type of flying machine.

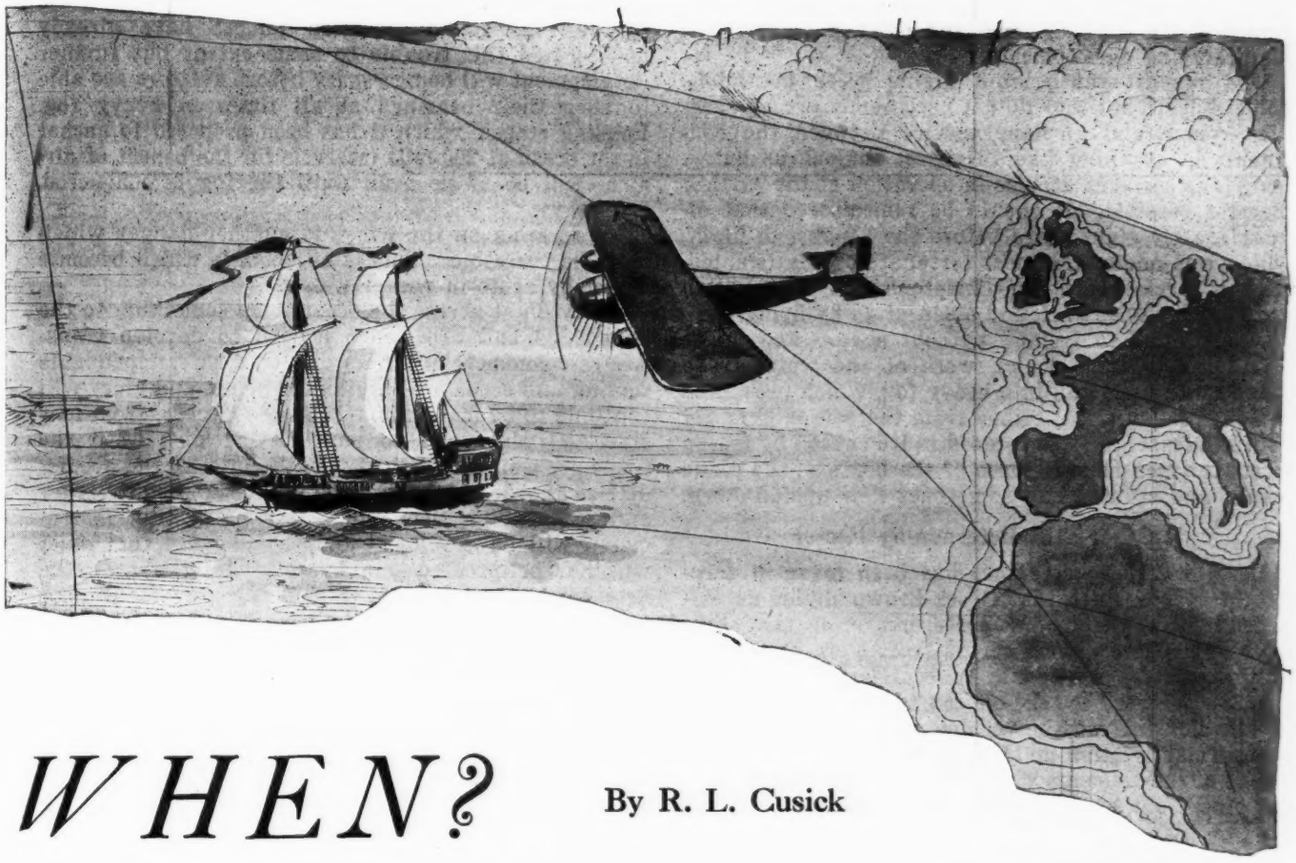
History shows that the development of any form of transportation is a long and tedious process. Not years but centuries have been required to evolve the ships, railroads, automobiles and airplanes that we are using today.

There is a popular fallacy regarding the time that it took to develop the automobile and the airplane. The average layman today holds serenely to the belief that he was alive to witness the birth of both. As a matter of fact, Jean-Baptiste Dante, toward the end of the 15th Century, made flights with a glider near Lake Trasimene and in the city of Perugia, and from that time to Dec. 17, 1903, when the Wright brothers made their 59-second flight on the Kill-Devil dunes, N. C., man was constantly carrying on experiments and studies in the field of aeronautics.

18th Century Automobiles

In the 18th Century, Captain Cugnot, the Frenchman, built three steam automobiles. They were not very successful and resembled not at all the efficient, fast, streamlined machines we use today, but they marked the initial step in the development which was finally brought to fruition in our own time by Duryea, Haynes, Winton, Olds, and their contemporaries.

In considering the possibilities of an early transoceanic airplane service, it may be interesting and illuminating to make a comparison with the develop-



WHEN?

By R. L. Cusick

ment of water transportation, since the two forms of travel have the common purpose of transferring man and his products across the seas.

The first trip across the Atlantic by boat, of which we have any authentic record, was made by Columbus in the "Santa Maria," in 1492, the voyage having started at Palos, Spain, on Aug. 3 of that year and ended at San Salvador on Oct. 12.

Ship Development Slow

To many living in that period, the successful voyage from the Old World to the New and back again must have appeared as an achievement that would immediately lead to the establishment of commercial ship lines to all known parts of the world. It was a great step forward in a development which had its genesis in the Stone Age when the first dugout canoes were launched, and which, 3000 years before Christ, had progressed to the point where the Egyptians were building vessels that weathered rough seas and were capable of carrying cattle and other heavy freight; the Phoenicians, premier seamen of their time, were sailing the Mediterranean in merchant ships, and later, about the 8th Century, the Vikings were venturing far a-sea on their predatory voyages.

Yet it was several centuries after Columbus' death before ships in any considerable numbers were crossing the Atlantic, and it wasn't until the beginning of the 19th Century that steam power was introduced as a substitute for sails. The development of the steamship was by no means rapid. Fulton built the "Clermont" and operated it on the Hudson in 1807. In 1809 the "Phoenix" ran from Hoboken, N. J., to Philadelphia, and was the first steamer to make a sea voyage. In 1816 the first steam passenger boat crossed the English Channel from Brighton to Havre. The "Savannah" was the first steamer to cross the Atlantic, making the trip from Savannah to Liverpool in 1819. Fourteen years elapsed before the trip was again attempted with a steamship—the Royal William in 1833. The first steamer to be constructed specially for trans-Atlantic service was the "Great Western," which made its first crossing in 1838.

The first company organized to carry on regular trans-Atlantic steamship service was the Cunard, which came into being in 1840—or 348 years after the voyage of Columbus.

It is of course obvious that the progress in aeronautics has been and will continue to be faster than that made by ocean-going ships. We live in a more enlightened age, have more wealth, scientific knowledge and industrial machinery to work with, and move faster generally toward our goals. Yet our progress is slow enough.

The crossing of the English Channel by air might be used as an example of how slowly such ventures move from the experimental to the practical or commercial stage. Latham made the first attempt to cross the Channel on July 19, 1909, but fell into the sea seven miles from shore. Bleriot was more successful, when, a week later, he crossed from Calais to Dover in 37 minutes. The next step was to bridge the distance between London and Paris, and this was done by Prier in 1911, the 250 miles being covered without a stop. But it was not until 1919 that commercial lines were established over this comparatively short route. We must, of course, take into consideration the fact that the war interfered with the expansion of all phases of commercial aviation, but at the same time the experience gained in building planes for mili-

tary use may, after all, have hastened, rather than retarded, the cross-Channel and other passenger and mail-carrying developments.

The recent transoceanic flights were marvelous achievements but they do not necessarily presage regular commercial airplane service between the continents in anything like 10 years, anxious as everybody is to see such service in operation at the earliest moment possible. It should be remembered that almost exactly eight years before the Lindbergh flight, which was one of the most fortunate ever attempted, Captain Jack Alcock and Lieutenant Arthur Brown created almost as profound a sensation by flying from Newfoundland to Ireland without a stop and under weather conditions which were of the worst. The plane continually ran into heavy fog, which prevented bearings being taken either from the sea or sky; for hours the machine was incased in ice caused by frozen sleet; the men lost all sense of the horizon; the plane looped and stunted and sometimes flew upside down.

Weather Still Determining Factor

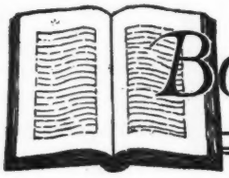
Despite the progress that has been made in aeronautic design since the Alcock-Brown flight, as evidenced by the splendid performance of the ships which have lately gone across from New York, none of the aviators waiting at present on the European side for the word to take off can afford to venture out in any but the most favorable weather. Successful commercial aviation must be superior to the weather.

One of the elements which remains to be conquered, as pointed out by Commander Byrd following his unsuccessful attempt to reach Paris from New York, is the fog. Radio direction finders have already ameliorated this trouble to some extent but further development will be necessary before aviators are able to keep their bearings at all times in heavy fog. Landing stages, which it has been proposed to anchor in the ocean at 200-mile intervals for the benefit of airmen, will be of no avail until the fog is conquered, Byrd says.

Ice forming on the wings is another danger which must be overcome. This is an obstacle which becomes especially acute in winter weather.

Every flight across the ocean adds something to the knowledge and experience needed to develop trans-Atlantic commercial air service, on a safe, dependable footing and occasional flights for prizes and glory will continue to be made for a number of years, from new starting points and to new destinations, until the trails are well established. In the interim the accumulative knowledge thus gained will be applied to larger and safer ships, new and better navigating instruments will be developed and the dangers that exist will be fool-proofed one by one. By the time the first commercial passenger ship is ready to attempt the journey, the public will have become sufficiently accustomed to transoceanic flying to accept it as a reasonably safe means of travel and to support it.

In the meantime, Rome wasn't built in a day, one swallow doesn't make a summer, and we may as well face the facts regarding the formidability of the obstacles that still stand in the way of this greatest of all mechanical undertakings.



Books for the Business Bookshelf

On the Design of Airships

Airship Design. Charles P. Burgess. The Ronald Press Co., New York. 300 pp. Illus. $9.

DESIGN on the basis of a careful predetermination of loads and stresses is essential in the case of structures of great magnitude and therefore great cost. In designing automobile parts, which are comparatively small, it is possible to "cut and try," even though that may not be the best method; but when a structure such as a rigid airship is to be designed, the cost of which runs into the millions, it is of the highest importance that the best use be made of all the available experimental data and of the pertinent principles of mechanics and aerodynamics. A careful predetermination of stresses is necessary in this particular case also because lightness is an essential quality of the product, and in order to combine safety with lightness it is necessary to choose the materials of construction judiciously and dispose them rationally.

A large amount of material that should prove handy to the airship designer has been collected in Airship Design by Mr. Burgess, who is aeronautical engineer of the Bureau of Aeronautics, United States Navy, and associate professor of aeronautical engineering in the Massachusetts Institute of Technology, and therefore specializes in the subjects on which he writes. The work is a technical one, designed to meet the needs of those engaged in the design of airships, and will therefore hardly enjoy a wide circulation, but it is written in very readable style and the mathematical work is comparatively simple. The text is arranged largely on the basis of the main problems involved in airship design, and whatever historical and descriptive material is included is by way of illustrations of methods of solving these problems. A commendable feature is that the derivation of design formula is generally followed by illustrative examples, which in many cases serve to remove any doubt in the mind of the student as to the exact meaning of certain terms in the equation. The following chapter heads will serve to give a good idea of the ground covered in this work: The Types of Airships; Size and Performance; Volumes, Areas and Linear Dimensions; Load, Shear and Moments; Aerodynamic Forces; Strength of Non-Rigid Airships; Longitudinal Strength of Rigid Airships; Gas Pressure Forces and Transverse Strength; Design of Girders; Steps in Design; Common Airship Fallacies.

Soviet Russia Explained

EXPORTS, Imports and Concessions of the Soviet Union" is the title of a large volume which has just been published by the Soviet Government with the object of informing the foreign business man with respect to the foreign trade and concession affairs in the Soviet Union. It is printed in Russian, English, German and French and contains numerous articles on different industries.

New Motorcycle *Features* Include "*Fore-Wheel*" Brakes

Harley-Davidson and Indian announce 1928 lines with many improvements. Former introduces throttle-controlled motor lubrication while latter has new frame and other changes.

FORE-WHEEL brakes, throttle-controlled motor lubrication, an air cleaner and a gear lock are important features of the 1928 line of motorcycles recently announced by the Harley-Davidson Motor Co. The Indian Motocycle Co. has also announced its 1928 series, which features a number of changes designed to improve riding comfort, appearance and performance.

The fore-wheel brake fitted on the Harley-Davidson machines is an internal type actuated by an expanding mechanism which is started into action by a wire leading from the left handlebar. The lower end of the mechanism is anchored to the brake end plate. To this anchorage is coupled an anchor member whose forward end is fitted to a lug on the brake end plate. The brake is so designed and located that any movement of the front wheel is possible without affecting the action.

A device governing the flow of oil from the mechanical oiler to the crankcase is interconnected with the throttle in such a manner that the correct amount of oil is fed regardless of the throttle opening. This has been done to eliminate the use of a hand oil pump when riding at high speeds. The hand pump has been retained to fill the crankcase after flushing.

On machines equipped with the De Luxe carburetor an air cleaner which fits over the auxiliary air intake is supplied. A gearshift lock is supplied on all twin models and is now a part of the clutch operating arm, a lug on the arm fitting into notches in the shift quadrant.

Dow Metal Pistons

Special sport models have Dow metal pistons and a new type of handlebar. No changes have been made in the standard twin models save for those referred to before. The side valve and overhead valve singles have the fore-wheel brakes and new oiling control, while the side valve models also have the air cleaners and Dow metal pistons. The overhead valve models have aluminum pistons. The connecting rod and flywheel assemblies are new this year.

Other changes in the singles include ½ in. pitch chains, larger cushion engine sprockets, a new oil retainer in the gear box, wider mudguards, with the rear one hinged, and a new horn bracket. In the new sidecar the extension axle has been abandoned and a fixed axle is now standard. This is located further forward to give a lower appearance to the sidecar.

Equipment on the new models include Goodyear and Firestone tires; Globe batteries; C. M. Hall and Kay Bee lamps; Mesinger saddles and tandems; National spokes; Rich valves; Weston ammeters; Wheeler-Schebler carburetors; Robert Bosch magnetos; Champion spark plugs and Diamond & Duckworth roller chains.

The Indian "Prince" for 1928 has a new frame, new streamline fuel tank, new handlebars, a finely finished instrument board and changed location of footboards, saddle, handlebars and controls to give greater comfort and easier control for the rider. Foot clutch is standard now with hand clutch optional.

A new muffler is employed on the new models to deaden exhaust sounds with a minimum of back pressure. New valves reduce mechanical noises and chain noises have been greatly reduced by use of present clearances allowed in the chain guards. Other changes include a new battery, new generator belt, a larger toolbox, a shut-off in the hand oil pump line with improved oil lines all around.

Gear Ratios Altered

Gear ratios have been altered to provide quicker pick-up in traffic and the new gearshift lever and mechanism permits easier and more positive shifting of gears. A new lubrication system supplies oil directly to the camcase, from which it goes to the main bearings via a hollow pinion shaft, flywheel and crankpin. A high turbulence head is employed in which the spark plug location has been changed.

The new "Scout" series of Indian machines has an electrical system protected by a harness. New brackets for the headlamp and a new position for the horn have been provided. More complete distribution of oil has been obtained by alterations in the lubrication system. Steel bearing retainers are used throughout the job. Various other detail changes have been made in the line to promote comfort, convenience and performance.

Equipment supplied on Indian motorcycles includes: Goodyear or Firestone balloon tires; Splitdorf magneto and generator; Wico battery; Mesinger and Persons-Majestic saddles; Westinghouse ammeter; Klaxon horn; Victor light equipment; Schebler carburetors; Champion and Splitdorf porcelain spark plugs; Raybestos brake linings and clutch disks.

IN Chile there were about 13,000 automobiles in service at the end of 1926, of which 7000-8000 were Fords. The motor vehicles in service in the capital, Santiago, comprised 3300 private passenger cars, 1120 motor cabs, 1100 trucks and delivery wagons, 406 motor buses and 520 buses on Ford chassis, a total of 6446.

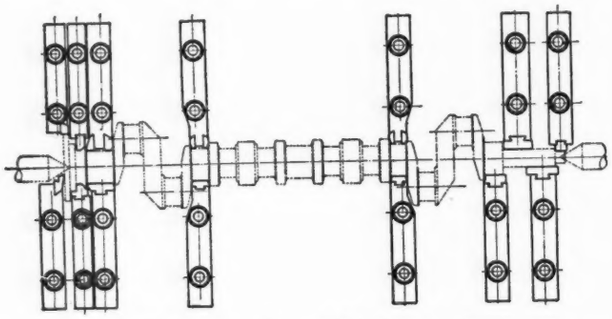
According to the official statistics of foreign commerce, during the year 1925 there were imported passenger cars and motor buses to the value of $2,908,050 from the United States; $361,848 from Italy; $211,562 from France; $187,354 from Germany; $65,164 from Great Britain and $18,637 from various countries. Trucks and delivery wagons were imported to the value of $287,810 from the United States; $9,407 from Germany; $7,450 from Italy and $4,587 from France. The total number of motor vehicles imported in 1925 was 1149; in 1926 the number of private passenger cars and motor buses imported was 972.

NEW DEVELOPMENTS—Automotive

Wickes Crankshaft Lathe

WICKES BROTHERS of Saginaw, Mich., who for years have specialized in the manufacture of crankshaft machining tools, have announced a new 34-in. semi-automatic center-drive crankshaft lathe. Four of these machines have been on production work in the plant of the manufacturer for a period of over six months, and they are now being offered to other manufacturers.

This machine is arranged to hold the crankshaft on anti-friction live centers and to drive from the center



Layout of tooling for eight-throw, five-bearing crankshaft

bearing, which has been previously machined. The drive is by means of a herringbone gear, which securely clamps the center bearing. The lathe then "cheeks," turns and fillets the front bearing, front end of crank, rear bearing, oil groove and flange. The crankshaft shown in the lathe is a three-bearing six-throw crank.

The drawing herewith is a layout of the tooling for a heavy five-bearing, eight-throw crankshaft, which shows that the center drive lathe "cheeks," turns and fillets line bearings Nos. 1, 2, 4 and 5, the front end of the crank and the oil groove and flange. The cross slides are arranged so that the tooling can easily be changed for machining different cranks in the same lathe.

This machine follows the general design of the Wickes semi-automatic crankshaft lathe arranged for pin turning, which has been on the market for several years. This lathe is equipped with power feed, with quick-change gear box, automatic split feed, automatic feed stops, automatic accelerating device to the crankshaft (so that the lineal cutting speed remains constant) and in fact, all of the features of the Wickes standard crankshaft lathe. The drive is through a silent chain belt from a motor mounted on the head stock.

It will be seen from the photograph that the rear tools are carried on inverted cross slides. These inverted slides are mounted in a housing which is securely bolted at the bed. This arrangement of the tooling assures easy clearance of the ships and cooling compound.

The cross slides are equipped with the Wickes electric rapid cross traverse for quickly advancing the tools to the cutting position, and after the operation is complete, retreating the tools to the unloading position.

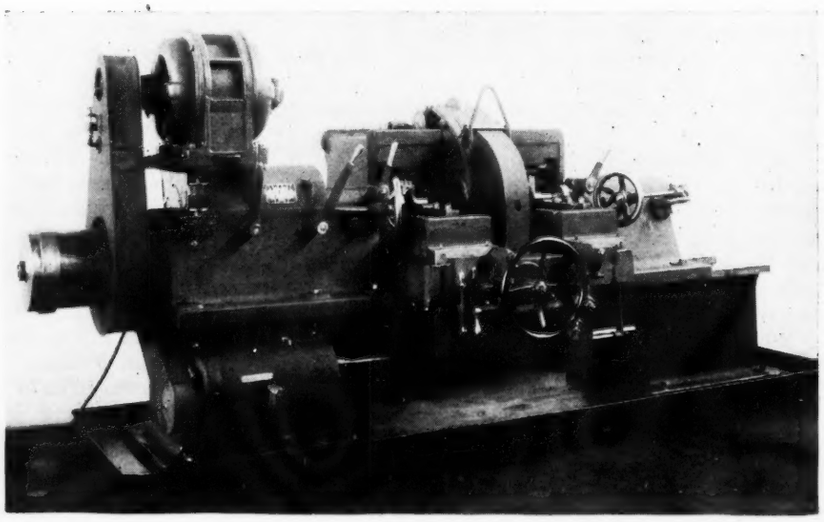
A 15-hp. or 20-hp. motor is required to drive the lathe, the approximate net weight of which is 17,500 lb. The arrangement of the herringbone gear and the centers is such that the chucking of the crank is very simple and requires only one minute. This type of lathe gives a very high production, as it does in one operation what previously required several.

Front Dial Feed Control

KEARNEY & TRECKER CORP., Milwaukee, Wis., announces two new milling machines, a No. 2 Standard and a No. 3 Standard. These embody all of the features which characterize the company's line of milling machines, such as power rapid traverse, roller bearings, low pressure coolant system, etc., and in addition a new feature not heretofore described. This is a front dial feed control, for which a number of advantages are claimed.

Referring to the illustration herewith, a single crank lever and direct reading dial located on the front of the knee at the right make it possible to secure 18 changes of feed both while the machine is running and when it is standing idle. The feed box is located at the rear of the column. It is of the selective sliding gear type, and all of its gears are made of alloy steel and heat-treated. The gearbox is automatically lubricated by the same pump that lubricates the inside of the column.

Passing along the right side of the column of the front of the knee is a universal-joint shaft, on the front end of which is mounted a single crank lever for changing all feeds. The dial with the numerals on it revolves with the crank handle. The outer rim, and the inner portion on which is mounted the arrow, re-



Wickes 34-in., center-drive, semi-automatic crank-shaft lathe

Parts, Accessories and Production Tools

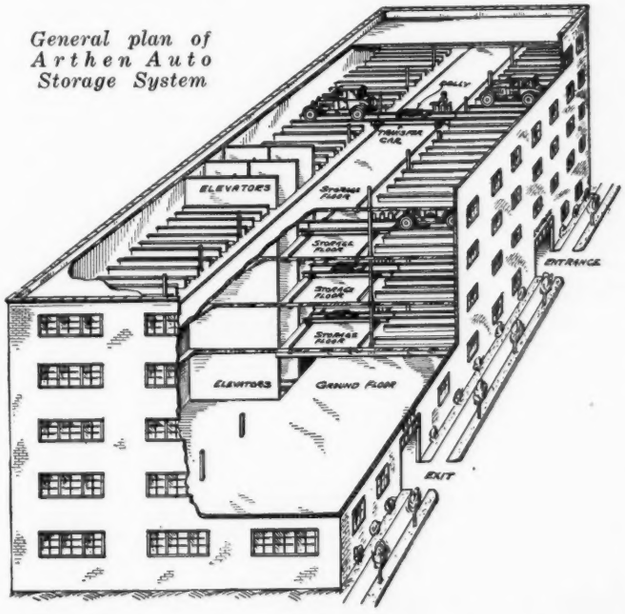
main stationary. There are two holes, 180 deg. apart, into which the plunger engages. One-half a revolution of the crank effects the change to the next highest or lowest feed.

Among the advantages claimed for this new construction is that it has allowed of increasing both the number and the range of the feeds. Eighteen changes of feed are now available, ranging from 5/16-in. to 25 in. per minute. The rotary dial is direct-reading. It is not necessary to study out a chart or table, and if the man in charge walks past and wants to know what feed the operator is using, he can tell at a glance.

The feed control is at the front of the machine and the feed box at the rear, which allows of making the feed box of liberal size and of oiling it automatically, the same as all other gears and bearings inside the column. By placing the feed box at the rear of the column as a separate unit it may be quickly assembled or removed when desired.

New Car Storage Method

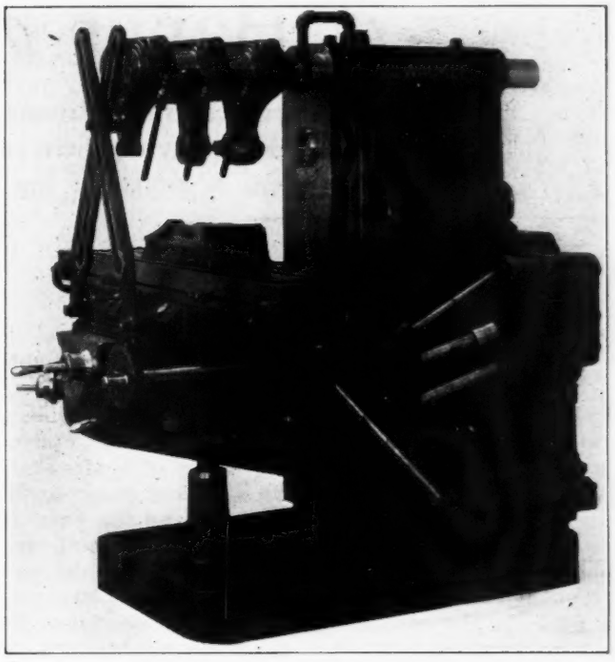
General plan of Arthen Auto Storage System



A NEW method of automobile storage has been developed and patented by A. G. Hendricks, vice-president of the Harnischfeger Corp., Milwaukee, and is known as the Arthen storage system. In operation an elevator carries the car to the proper floor where an electric dolly runs under its front axle, by means of motor operated arms raises the front wheels and then pulls the car onto a transfer car which can travel up and down the length of the storage space.

The transfer car is spotted opposite the desired storage space and the car is moved into position by the dolly. The arms which raised the front of the car are then lowered, the dolly withdrawn and returned to the transfer car ready for the next car to be stored. In removing cars the opposite procedure is used.

Among the advantages claimed for this method are that doors can be locked after the car is run on the elevator since the motor is not used for getting the car into and out of storage. This protects personal effects left in the car and prevents soiling of the interior by the clothes of garage employees. Also, since the doors do not have to be opened, cars can be parked much closer together, thus conserving storage space. Because the car motor is not run while in the storage, no special ventilation is required and ceilings need be no higher than the car tops, again conserving space. Troughs are provided into which car wheels are run so that there need be no confusion in getting cars into and out of position.



Belt-driven style of new Geist roller pipe cutter

Geist Roller Pipe Cutter

THE Landis Machine Co., Waynesboro, Pa., is marketing two pipe cutters being made by The Geist Mfg. Co. Two sizes are included, from 1½ to 4 in. and from 3½ to 6 in. Cutters are of heat-treated steel and can be reground. The cutter shaft bearing is provided with an adjustable cap on the cutter side for taking up wear. The cutter is lowered to the pipe by means of a hand-wheel.

Rollers are carried in roller bearings. The roller supporting cage is bolted to the bed of the machine. A length gage is provided for lengths up to 40 in. All spindles and shafts are ground and run in bronze-bushed bearings. Machines can be furnished for belt drive or equipped with individual motors. The smaller machine requires a 3 hp. motor while the larger machine takes a 5 hp. motor. When motor driven, power is transmitted by means of gear.

Company Puts *Production* Control *in* Hands *of* Workmen

Difficult problem solved in small plant by employing high-class machinists, paying them on piece-rate basis and holding them responsible for profitable flow of work.

By K. W. Stillman

TO fill a replacement market demand for well over 200 different designs of axle shaft suitable for practically every car, truck and bus now in operation in the country would appear to provide a rather difficult production control problem. Orders come in from jobbers for any quantity of shafts from one up to hundreds. To have sufficient stock to fill all such orders quickly but not overload the finished stock inventory with a lot of slow-moving material, and, finally, not to have high production costs through frequent runs on small quantities of shafts presents a problem the solution of which is often found in rather complicated production control mechanisms.

The plant of the U. S. Axle Co., in Pottstown, Pa., however, has found means of accomplishing this task with a minimum of those control factors which tend to raise overhead costs. Here, axle shafts are manufactured and carried in stock for instant shipment to fit all the various models of some 175 makes of passenger cars and about 225 makes of trucks and buses. In spite of the intricate production requirements that such a program would seem to entail, the entire control, which keeps a minimum finished parts inventory, permits a very small proportion of back orders to be involved and keeps production costs well within competitive limits, is carried on by the part-time work of one man.

Possibly the most important reason why this is possible is to be found in the fact that the machine tool operators are all expert machinists and all are paid on a piece-rate basis. Because of the high type of workmen employed and the incentive given by the wage-payment plan used it has been possible for the management to turn over to the workmen a considerable share of the control work with very satisfactory results.

Stock Kept in Open Racks

Finished axle shafts are stocked in open racks which are readily available for inspection by the management and men. When supplies of any particular design are running low a shop order is made out calling for production of new ones, the number to be made depending upon sales records of that design. This order is sent directly to the shop and from that point its progress is left almost entirely up to the workmen.

There are a number of axle shaft designs for which there is rather small demand, naturally, but they must be kept in stock, so that production orders for these types may be for as few as 25 pieces. Piece rates, however, are set without regard to the number of pieces which may be ordered so that if the operators had to make new set-ups for each individual order, production costs would rise or their wages would be low.

Fortunately, there are few axle shaft designs which are entirely unique. They are made from the same diameter stock, are of the same length, have identical tapers, are splined similarly to shafts of other design or have some other features which, for certain production operations, at least, make them the same as shafts produced in large quantities. It is this fact and the advantage of it taken by the workmen which provides production control.

The workmen keep rather close watch of finished stocks. If stocks of a little-used design should become depleted they know that they will have to make complete set-ups for a possible run of only 25 pieces which, as piece rates are set without regard to quantities run, may not even pay them day wages. Thus they are constantly on the lookout to anticipate such demands.

For example, there may be an order going through for several hundred shafts for a popular make of car. The operators of the various machines on which this order will be run check the finished stock to see if supplies are low on any designs which can be run with this large order. The workmen operating the centering lathe will pick out all the available orders for shafts of the same diameter and will run them through as one order. The operator of the taper grinding machine will accumulate as many others as he can for shafts having the same taper as the large order he is set up for, and other machine operators will do the same thing.

The result is that although few individual orders issued to the shop call for more than 100 pieces, after setting up the machine each operator is usually able to run from 300 to 500 pieces before changing the machine. The workmen realize, of course, that once their machines are set up for a certain operation, the more pieces they can produce without changing it the larger will be their next pay check, so that once production orders have been issued to the shop they all come through in fairly quick time at a minimum cost.

It is possible, of course, and frequently happens, that small orders will have one or two operations performed on them and then will remain untouched for days, possibly weeks, waiting for a large order calling for similar work on the next operation with which it can be combined profitably. This might be thought a possible source of delay but does not prove to be so

since, after the first cutting and roughing operations are performed, which are done immediately the order is issued, any order can be finished in a single day's time if necessary.

So the operator realizes it to be useless to let the small order linger around unworked too long for he knows that if the finished stock becomes entirely depleted he will have to tear down his machine from, possibly, a profitable, long-run job, and re-set it to finish a few pieces called for. Knowing this, operators rarely let stock become depleted, but if no large order appears to be on the way, they will make a special set-up for the small order at a time when they may have little work ahead.

For the management's part, it knows that if an order for a particular design has gone to the shop, and this can be ascertained directly from the stock racks, some part of it, at least enough to meet any ordinary demands, can be completed within a day even though the shop men should neglect it entirely, which they seldom do.

Stress on Cost Reduction

Great stress is placed upon cost reduction in all shop processes and this method of control contributes largely to it since small orders are usually produced at no greater cost than large ones. As another attack at costs it has become the shop policy never to take two operations for a job when it can be done in one. How far this has been carried is well illustrated by the rough turning operation on large bus axle shafts.

These shafts are made of 4¼ in. bar stock formed of S.A.E. 3240 steel, a pretty tough chrome-nickel material. The finished shafts taper down to 2⅝ in. diameter at the end and the bar is roughed out to this dimension in a single cut on a Lodge & Shipley lathe, the final cuttings being nearly ⅞ in. thick. To perform this operation, the lathe speed is slowed down considerably and Poldi tool steel, an Austrian product, is employed.

All shafts are made from bar stock, S.A.E. 3140 steel being used for most light pieces while 3240 is used for heavy duty shafts. The bars are cut to length in the first operation and then rough turned. In cutting, again, every effort is made to reduce costs by elimination of waste stock. Suppose, for example, that the bar stock to be used is 156 in. long, and that an order is to be written for shafts 31⅞ in. long. Shafts of this length cannot be cut from the bar stock without considerable waste so, at the same time, another order is placed for shafts which may be cut from the stock with the original order.

Thus the order might read that three 31⅞ in. shafts are to be cut from each bar while the remainder will be cut into two 29⅞ in. lengths for another shaft using the same diameter stock. In this way it has been possible to keep the bar stock scrap down to an absolute minimum, it consisting mainly of that taken by saw kerfs and the small amount which must be taken from the ends of the bars to square them up.

The rough turning operation is performed on Lodge & Shipley and National lathes and reduces the bar to approximate finished proportions. Then they are all heat treated, Brinell tested and returned to the lathes for finish turning.

The tapers are ground in a Norton grinding machine where from .020 to .040 in. is removed by a wide faced, straight-infeed wheel. In all turning and grinding operations the axles are held on centers and are driven by means of a clamp arm which is inserted into a hole in the lathe head.

For cutting splines, a No. 2 Cincinnati miller is used as well as several hobbing machines. The miller is equipped with a special three jaw chuck which contains a rack-and-gear indexing mechanism. The shafts are inserted in the chuck and carefully centered by means of an indicator which rests on the table and against which the protruding end of the shaft is rotated. The end of the shaft to be splined is supported in a centering device. Two cutters are employed and two adjacent splines cut simultaneously. Two sizes of chucks enable any size of shaft from the smallest to the largest to be splined on this machine.

Keyways in the wheel ends of shafts are cut on a No. 2 Cincinnati miller fitted with jigs for various diameters of shafts and for varying tapers. The number of shafts which are machined at a time depends, of course, upon their diameter but all the jigs have been designed to take full advantage of the machine's capacity.

One very interesting thing about the production methods used in this plant is that, despite the many different designs of shafts made, no drawings or blueprints are used in writing orders of setting up machines. A sample shaft, identical with that used as original equipment, is kept for each item built and this sample is sent out to the shop with the production order and is used by the workmen for setting their machines and producing the pieces. This is made possible, of course, by the fact mentioned before, that all the machine operators are expert workmen who are fully capable of taking all measurements directly from the sample shaft.

The only exception to this practice is that gages are made for the tapers which are used to check the shafts as they come from the grinding operation. Wherever possible inspection is made by means of the actual parts with which the shaft is to be fitted in service. For example, splines are inspected by inserting them into a sample gear. In this way considerable engineering and inspection equipment expenses are saved while the products are made to fit the exact requirements they must meet in service.

How Piece Rates Are Set

Piece rates are set by the foreman based on empirical formulas relating to the diameter of the shaft, length, taper, number of splines, etc. Usually, these rates are satisfactory as first established on new pieces but, should experience prove them to be out of line, there is no hesitation in changing them.

Once the rate has been set so that shaft costs are in line with standard costs the management places no limits on the amount of earnings made by the men. Some of the larger machines are driven by individual motors and frequently when set up for a large run the men stay well into the night in order to finish a job. The management is quite in favor of this practice and encourages the men in every way to increase their production and their earnings as much as possible.

Many of the men have been able to so arrange their work that they operate as many as four machines simultaneously, all performing different operations. This again, is satisfactory to the management. Each of the jobs has a piece rate which produces a product for a cost which is low enough to meet competition. If the men wish to cash in on two or three separate piece rates in a single working period that is just so much more production and the management is quite pleased with the results.

In *the* Realm *of* Metallurgy—

Inclusions in aluminum alloys studied in Junkers laboratory. Elimination is probable by heat treatment.

INCLUSIONS in aluminum alloys have been investigated in the research laboratory of Prof. Junkers, and the results are dealt with in a paper by H. Steudel read before the Deutsche Gesellschaft fur Metallkunde (German Metallurgical Society). Such inclusions originate either in impurities in the added aluminum or in deficiencies of the melting process and defective grain structure. By studying the development of the metallurgy of iron and steel it is found that improvement was achieved by the elimination of inclusions and refinement of the grain structure by heat treatment. The belief is expressed that improvement in aluminum alloys will be brought about in the same way.

The alloys are melted in special furnaces and purified, and are improved by remelting. The most common impurities are iron and silicon. The former appears as Fe Al_3, which breaks up the grain structure in about the same way as the graphite in gray iron; it interferes with solidification and promotes the formation of blowholes. If the alloys are present in eutectic form they are more favorable to good grain structure than are large flakes.

Silicon has different effects. It is moderately soluble in aluminum and appears, according to the heat treatment, either in the elementary form or in the form of compound crystals. Other possible practically insoluble impurities which act as inclusions are manganese, nickel, copper, magnesium and zinc. A hypereutectic silicon alloy is recommended for aluminum alloy pistons. The tensile strength and ductility of the alloy can be increased by refining the inclusions, by chemical or thermal treatment (alternate annealing and quenching).

Parts of the crucible lining also often appear as inclusions. As foreign inclusions may be regarded also gas bubbles and blow holes, and experiments have shown that so-called porous spots are much more injurious to the material than larger holes. In the case of aluminum-magnesium alloys the crystals can be broken up by stretching and the coarse inclusions refined in this way. This adds to the tensile strength of the alloy.

Rehammering Sometimes Impossible

The greater the inclusions the more the materials must be kneaded in order to refine them. The tensile strength is decreased less in the longitudinal direction than in the direction transverse to the load. Suitable rehammering may disrupt the fibrous structure and improve the grain. Sometimes, however, rehammering is impossible on account of the form of a part, and in that case the inclusions must be reduced during the fabrication of the parts. Dix succeeded in dissolving the $FeAl_3$ eutectic by prolonged annealing, and in transforming it into soluble crystals, thus achieving an improvement in the same way as in the case of steel.

If it is desired to produce high-quality alumium alloys iron must be kept out. Aluminum foundries remove the iron, and care must be taken that no iron is absorbed in the further manipulation of the alloy. Kneading in a single direction results in a faulty grain structure and the material should therefore be kneaded in all directions.

Nichrome B Alloy

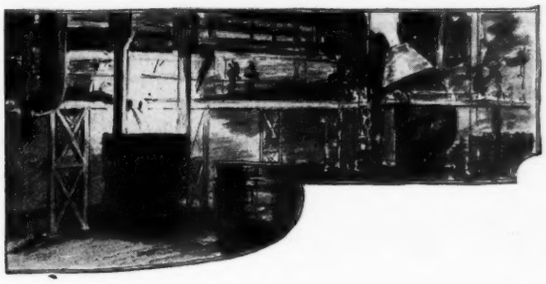
CONSIDERABLE interest is being shown by iron founders in the nickel-chromium alloy Nichrome B, which is added to gray iron in the ladle to produce iron castings of a finer grain structure, superior tensile strength and wearing qualities, and at the same time of good machining qualities. Nichrome B, which comes in the form of shot, is added to the iron in the ladle in the proportion of 1½ per cent.

Nichrome B is an alloy in the proportion of five parts of nickel to one part of chromium. Nickel, the chief constituent, has the property of breaking up and distributing the graphite flakes, thereby refining the grain. The action of the nickel is somewhat similar to that of silicon, except that nickel up to a certain proportion progressively improves the physical properties of the iron. Nickel has the further effect of reducing the chill, and, by reason of its tendency to eliminate free carbides, it renders the iron easily machinable even though its Brinell hardness is raised. The increase in the hardness of the gray iron is due to the hardening of the iron matrix, instead of to an increase in the hard carbides. It is stated that nickel irons with as high a Brinell hardness as 275 have been found machinable.

Chromium, the other ingredient, has the effect of counteracting an undesirable property of the nickel, that of reducing the combined carbon. If the combined carbon is reduced below the eutectoid ratio the beneficial effects of the nickel will be considerably reduced. It is here that the chromium is valuable, because chromium increases the proportion of combined carbon.

Owing to the form in which the alloy is furnished and the way it is added to the iron there is very little loss of chromium, although this metal oxidizes very readily. The addition is easily made and the percentages of nickel and chromium in the cast metal can be predetermined with considerable accuracy. The claim is made for this alloy that, since it is added in the ladle, it need be used only for those particular castings for which it is really beneficial, though in foundries specializing on automotive work this is not a very important matter, as production is usually on a large scale. The largest automotive casting in which the alloy is used is the engine cylinder block, and it is quite likely that the constant tread toward higher speeds—tending toward greater wear of cylinder bores—and the recent

New Processes *and* Materials



Cast Iron given unusual properties by allowing it to solidify white and graphitising it by annealing.

tendency to use increased compression ratios, thus imposing higher strains on the material of the cylinder block, account in part for the increased use of this alloy.

Properties of Cast Iron

A NUMBER of papers dealing with the properties of cast iron, both the ordinary gray iron and special irons containing alloying elements, were presented at the recent meeting of the British Institute of Foundrymen at Sheffield. One, on Nickel and Chromium in Cast Iron, was by Prof. E. Piwowarski of the Technical College of Aix-la-Chapelle, Germany, and was in the nature of a preliminary report of a research carried out at that institution.

Prof. Piwowarski said that by causing a cast iron to solidify white by accelerated cooling and graphitising it by subsequent annealing, unprecedented mechanical properties were obtained. High grade material of this kind, with a transverse strength of from 113,500 to 141.-900 lb. p. sq. in. in perfect bars, was further improved by from 10 to 30 per cent (141.900 to 185,000 lb.) by the addition of nickel or of nickel and chromium. This cast iron in the transverse test deflected from two to three times as much as ordinary pearlitic cast iron. In tensile tests on specimens without large defects elongations of from 2 to 4 per cent were obtained and a tensile strength of 106,000 lb. p. sq. in. was obtained. Although the hardness figures were very high, between 200 and 300 Brinell, the machinability was at least as good as that of ordinary gray cast iron.

Variations and Causes

J. E. Fletcher called attention to the fact that there are often wide variations in test results obtained from test bars from the same melt and pointed out some of the possible causes of these variations. Mr. Fletcher said that the dominating influence of silicon and total carbon together, and the importance of the carbon and silicon proportions in the T.C. + Si factor must have first attention when attempting to interpret the analysis of a cast iron in terms of its mechanical strength. The influence of total carbon, silicon, manganese and phosphorus were related to Brinell hardness values. There, again, the sum of the total carbon and silicon contents were shown to be of great importance. The modulus of rupture or rupture stress in transverse tests, when considered in relationship to the ultimate tensile strength, yielded a valuable factor, T*v*/T, which played an important part in a study of the strength of cast iron. That factor was related to the deflection, to the sum of the total carbon and silicon contents, and to the relationship of carbon to silicon in that sum. The author ventured to hope that by that new view of the factors at work in determining the strength of cast iron, some further light would be thrown on the reasons for some of the great differences in mechanical strength of cast irons of apparently similar chemical analysis. The paramount influence of the rate of cooling of the metal in the mold was not lost sight of, but the author purposely avoided touching the many-sided problem involved in the consideration of the variations in strength due to varying thicknesses of a casting. The paper therefore sought to point out the differences in mechanical strength in castings of about 1¼ in. diameter, or 2 in. by 1 in. section, having approximately the same cooling ratio, perimeter of section ÷ area of section.

In the discussion of these papers it was brought out that when nickel and chromium are added to cast iron the silicon content should be decreased, as silicon and nickel both have the same effect of producing graphite. Silicon produces a coarse and nickel a fine graphite in smaller quantity, and sometimes the graphite in nickel iron is so fine that it can hardly be seen under the microscope. The proportions of nickel and chromium should be the same as in alloy steels—two or three times as much nickel as chromium.

Nickel chromium irons are regularly produced in Sheffield and command the price which their higher production cost warrants.

Hot-Rolled Nichrome

THE Driver-Harris Co., Harrison, N.J., has succeeded in making hot-rolled bars of its special heat-resisting alloy nichrome and is maintaining a stock of round, square and hexagon bars in sizes up to 1½ in., while special shapes are being made to order. It is expected that these rolled sections will be largely used where castings of nichrome have been used in the past. The rolled material in many cases permits of neater and more suitable construction and possesses all the advantages of a malleable material over the more brittle castings.

The advantages of this new rolled stock reside particularly in its high tensile strength at elevated temperatures, and the material will find application chiefly in parts of heat-treating furnaces and equipment. At 1100 deg. Fahr. the tensile strength is 44,000 lb. p. sq. in.; at 1600 deg., 20,000 lb. and at 1800 deg. 12,000 lb.

The Driver-Harris company has established connections with a large bolt manufacturer in its district and can furnish screws and bolts of the drawn material at short notice. From 15,000 to 20,000 lb. of the rolled material is now being carried in stock and it is planned to carry larger stocks later as engineers and designers become familiar with its uses.

THE FORUM

Curing Wheel "Wobble" *by* Adjusting Tire Central *With* King Pin

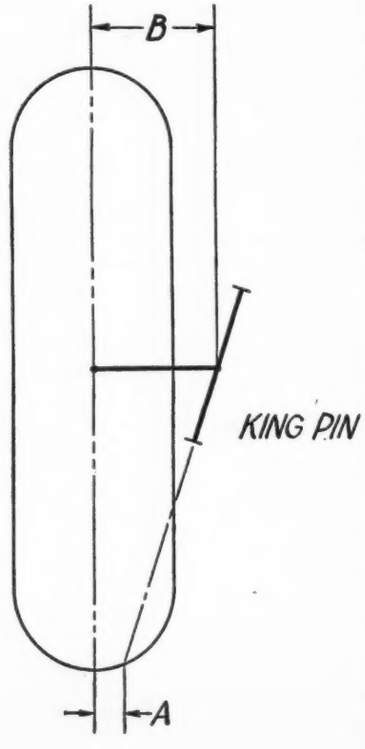
This method suggested as better than having centerline of king pin projected; intersect centerline of tire at ground to reduce kick of steering wheel.

Editor, AUTOMOTIVE INDUSTRIES:

Volumes have been written concerning wheel wobble, shimmy, and tramping, but so far, I believe, nothing has been written about the greatest cause of wheel wobble with a front brake axle.

Two months ago, having this problem of wheel wobble and resultant steering wheel "fight" to study, I came to the conclusion that, having the centerline of the king pin projected, so that it would intersect the centerline of the tire at the ground meant nothing as far as the reduction of wheel wobble and steering wheel "fight" was concerned.

A few days ago the writer discussed this point with one of the industry's best known consulting engineers, who at first argued that the centerline of the king pin, projected, should intersect the centerline of the tire at the ground in order to reduce the kick at the steering wheel, and under these conditions the moment arm is zero. This opinion seems to be quite common, but I venture to state that it is incorrect.



Driving a car with front brakes and a free steering gear, it can be noticed that when a rut across the road is struck simultaneously with both front wheels, no steering wheel "fight" or kick-back is felt. However, when one wheel alone strikes a rut or bump the steering wheel kick is sometimes quite severe. In the first case the moments are balanced. In the second case the unbalanced moment on the side starts the wheels to wobble, which results in a kick-back at the steering wheel.

If we can reduce the moment arm to zero, the moment will be zero and the wobble then should be reduced to a minimum. Inspecting an assembly drawing of a front axle, it can be seen that the actual moment arm upon which the road shock acts to cause wheel wobble is not the usual ¾ or 1-in. distance (letter *A* in sketch) measured on the ground from the centerline of the king pin (projected) to the centerline of the tire; but it is the distance from the centerline of the tire to the center of the king pin measured along the axis of the wheel spindle (letter *B* in sketch).

Front axles without brakes have been built with the king pin on the centerline of the tire, but these did not have inclined king pins such as are now used with front brake axles. However, the principle is precisely the same whether the king pin is inclined 8 or 10 deg. to the plane of the wheel or parallel to it.

A quick test could be made on some cars using disk wheels by having the disks offset enough toward the center of the car to bring the center of the tire over the center of the king pin. This, of course, would increase the turning radius considerably but might be tolerated for the sake of a test.

The wheel wobble referred to above should not be confused with that which is caused by an incorrect position of the rear end of the drag link.

The following table gives a brief comparison between the two cases:

Present Construction	Proposed Construction
Tire offset 3 in. to 3¾ in. from centerline of king pin.	Tire central with king pin.
1. Bump on one wheel—wheel wobble.	1. Bump on one wheel—no tendency for wheels to wobble unless bump is localized some distance from the center of tire.
2. Brakes unequally adjusted—car pulls toward	2. Brakes unequally adjusted—no tendency for

the side which has the best brake, because the frictional force of the tire on the road has for its moment arm the distance from the centerline of tire to the centerline of king pin and the moments on the two sides will be unbalanced.

3. Unbalanced in tire and rim tends to induce shimmy or wheel wobble at high speeds, because center of wheel is offset from center of king pin, sometimes as much as 3¾ in.

car to draw toward either side because, having no moment arms, the moments are each equal to zero even though the brakes are unequal.

3. Unbalance in tire and rim will not induce shimmy or wheel wobble at high speed unless the plane of unbalance is some distance from the centerline of tire.

RALPH C. CHESNUTT.

We should like to hear the opinions of some of our readers as to what is the effective lever arm in the case discussed by Mr. Chesnutt.—EDITOR.

Vaporization in Compression-Ignition Engines

Editor, AUTOMOTIVE INDUSTRIES:

In his letter published in your issue of July 23, Professor Norman takes exception to some frank remarks of Mr. Heldt (in your issue of June 18) regarding the completeness of combustion in compression-ignition engines running at automotive speeds. The optimism of Professor Norman and the frankness of Mr. Heldt are both commendable. Nevertheless, it may be well, in turn, to qualify the impressions that may be given by Professor Norman's letter.

For a number of years attempts have been made to have the development of the high-speed compression-ignition engine given more scientific support. We have witnessed (even carried on) development work that came finally to impress us that we were attacking the engine problem much as though a mechanic, ignorant of the laws of steam flow through nozzles, were trying with a file and a strip of steel to find the most efficient shape for a steam turbine blade.

We have heard much about flame propagation, pre-ignition, and detonation. But these events are away behind a part of the procession in a high-speed compression-ignition engine that needs attention. Gases more promptly burn clean than solids; and few engineers will doubt that a combustible vapor will more promptly burn clean in an engine than a finely divided liquid. In short, the vapor should have more chance than the liquid to burn without cracking. And more absence of cracking means less free carbon, and therefore less late burning.

Now if we were to ask Professor Norman what amount of energy would be necessary to open an engine valve of a given mass a given distance, he would immediately ask for the allowable time interval. And his question would be reasonable. A force requires time in order to be effective. But in the shifting, in the displacement of portions of matter at what point in the reduction in the mass of that matter may we begin to ignore the question of time?

Can Professor Norman tell us the average speed of the molecules in a charge of gas oil of 34 deg. Be. and at 150 deg. Fahr. and 8000 lb. per sq. in. absolute? Can he tell us what the average speed of those molecules is when the oil has become vapor in an engine where the temperature of the combustible mixture is 800 deg. Fahr. and the total pressure is 475 lb. per sq. in. absolute? Granting any reasonable amount of heat as available in the surrounding metal and contiguous air, and at reasonable temperatures, can Professor Norman tell us how long it took to change the speed of these molecules from that while in the liquid state to that in the vapor state? Does this required interval fall within the available interval for a compression-ignition engine operating at 3000 r.p.m.? If not what is the limiting r.p.m. of a compression-ignition engine if set by the time required to allow fuel vaporization?

It is not intended in the foregoing paragraphs to give the impression that vaporization is solely a matter of speeding up molecules. The purpose is to emphasize the critical importance of time.

As regards the attainment of high r.p.m., we can, as stated once before in these columns, obtain separately high r.p.m., good fuel economy, fair b.m.e.p. The difficulty is to get all of these at the same time without extreme maximum pressures. And high maximum pressures do not occur with late injection. (And neither does good fuel economy!) So once again, we would emphasize time.

If mechanical ingenuity rather than scientific knowledge of fuels, were all that is necessary to development compression-ignition engines, we should already have in print copious and complete test data of commercial engines running on compression-ignition at over 2000 r.p.m. But, in so far as we are aware, there isn't even an experimental compression-ignition engine giving the b.m.e.p. possible with the carburetor engine at 1400 r.p.m. and showing a fuel consumption below 0.6 lb. per b.hp. hour. And as regards the significance of that 0.6 lb. for compression-ignition engines, it may be of interest to quote from a recent discussion regarding the necessity of more scientific investigation of engine processes.

"Certainly any (compression-ignition) engine showing a fuel consumption of around 0.6 lb. per b.hp.-hr. should be legitimate quarry. If a fuel having 15 per cent hydrogen and 82 per cent carbon were used in, say, a large Doxford engine, we should expect early and complete combustion and about 0.37 lb. fuel consumed per b.hp.-hr. The hydrogen would burn first, then the carbon. Now it could be shown mathematically that if all the carbon were burned only to carbon monoxide instead of to carbon dioxide, disregarding the small amount of CO_2 due to chemical equilibrium, the heating value of the fuel would be so cut down that the engine would require around 0.66 lb. fuel per b.hp.-hr. And there are gas-producer authorities today who declare that carbon burned to carbon monoxide first. Where, then, engines showed fuel consumptions around 0.6 lb., he suggested not only applying the method of tangent analysis but also incorporating a term known as the gas-producer factor. An engine having 0.66 lb. fuel consumption per b.hp.-hr. could, till further refinements were made in the test code to take care of different ratios of compression, be credited with having a gas-producer factor of 100 per cent."

We have made sincere efforts at one of our large universities to have investigated the limits of the rate of fuel vaporation, only to be disappointed because of lack of the right man for such an undertaking. We should like to see what Professor Norman can do to bring us beyond the whittling and filing stage of compression-ignition engine development.

ROBERTSON MATTHEWS

AUTOMOTIVE NEWS SECTION INDUSTRIES

Philadelphia, Pennsylvania

Saturday, August 20, 1927

Factory Operations Near Highest Level for 1927

PHILADELPHIA, Aug. 20—Production of motor cars has been accelerated rapidly in the last few weeks and indications are that the August total will be close to the highest mark of the year for the companies exclusive of Ford, if, indeed, the best previous month of 1927 is not exceeded.

The stimulus given by recent price cuts and the introduction of new models is being clearly felt, and though in the lower price ranges there is some hesitancy to buy pending the announcement of the new Ford model, this has not seriously affected most of the companies producing cars at $1,000 or less.

The current active production is spread rather generally and all but a small minority of the companies are at a better rate than a year ago. Prices of course are lower and although output has been running about 10 per cent over a year ago for the non-Ford companies, dollar volume is little, if any, ahead. This, however, is by no means entirely due to reduced prices but reflects the big gains made by two or three companies selling in the lower price brackets.

New car stocks are at or only slightly above the low point of the year and used car stocks are in fair condition as dealers in many lines were able to dispose of the second-hand cars while awaiting arrivals of new models.

Steel Mills Silent During Gary Rites

CHICAGO, Aug. 18—All activity in the plants and offices of the United States Steel Corp. was suspended for five minutes this morning at the time of the funeral of Judge Elbert H. Gary, chairman of the board of the corporation, who died Monday. Interment was at Wheaton. All officials and directors of the corporation were in attendance.

Announcement of a successor to Judge Gary is expected to be withheld pending the return of J. P. Morgan from Europe, though it is generally credited that the selection has been decided upon for some time.

Judge Gary's death coming so soon after the report of the possible succession of Pierre S. duPont to the steel chairmanship has served to revive this possibility. It is frankly admitted, however, that there is no direct intimation who the new man will be, but it is regarded as likely that a duPont representative will be named to the board in view of the duPont steel investment.

Paige-Detroit Forms Export Corporation

DETROIT, Aug. 15—Paige-Detroit Motor Car Co. has organized Paige Motors International Corp. under New York State laws for the handling of Paige export business in all foreign markets. The new company, stock in which is entirely held by the Paige-Detroit Motor Car Co., will be a sales organization and the vehicle for a projected expansion of the Paige export business.

Robert C. Graham, vice-president of Paige-Detroit, is president of the export company. John D. Biggers, of Graham Brothers Corp., is vice-president, and Walter E. Morrison, hitherto export manager of Paige-Detroit, is secretary and treasurer. J. B. Graham and Ray A. Graham, together with the officers, are directors of the corporation.

Offices of Paige Motors International Corp. are at 1 East Forty-fourth St., New York, and Mr. Biggers and Mr. Morrison will make their headquarters there.

Although the corporation now is pursuing with little change the policies and procedure of the Paige export business as formerly conducted, plans are being formulated for an aggressive pursuit of foreign business.

Shows Loss in First Half

NEW YORK, Aug. 17 — Paige Detroit Motor Car Co. reports for the first half of 1927 a net loss of $1,426,463 as compared with a net income of $1,238,758, or $1.72 a share, earned on the common stock in the first half of 1926. For the second quarter of this year the net loss was $1,240,666 against a net income of $733,389 in the second quarter last year.

Briggs Profit $3,033,281

DETROIT, Aug. 16—Briggs Mfg. Co. reports net profit of $3,033,281 in the first half of 1927, comparing with $5,113,730 in the first half of 1926. For the June quarter net profit was $1,518,625 as against $1,514,656 in the previous quarter and against $2,466,388 in the June quarter last year.

July Output Total Estimated at 280,000

NEW YORK, Aug. 16—Car and truck production in the United States and Canada in July is estimated at about 280,000 units, of which probably not more than 5000 are accounted for by Ford Motor Co. This compares with 331,104 in June and 369,602 in July last year. Comparison, however, is very favorable when production of National Automobile Chamber of Commerce members alone is considered. During June the members turned out 297,384 units, and in July, 1926, 217,263 cars and trucks.

Tire Inventories Show Little Change July 1

NEW YORK, Aug. 17—Tire and tube shipments gained in June but due to acceleration of production in balloon casings and tubes there was a moderate increase in inventories, according to the Rubber Association of America, Inc. As in the high pressure lines shipments exceeded production, inventories for all types of casings and tubes showed little variation.

Comparisons follow:

		Inventory	Production	Shipments
Pneumatic Casings—All Types				
June,	1926	8,976,123	4,066,416	4,292,836
May,	1927	9,346,581	4,613,945	4,243,078
June,	1927	9,346,923	4,659,195	4,690,393
Inner Tubes—All Types				
June,	1926	15,181,992	4,627,800	5,173,818
May,	1927	13,792,496	5,053,018	4,605,277
June,	1927	13,393,897	4,729,830	5,124,246
Balloon Casings				
June,	1926	3,348,039	2,197,580	1,895,997
May,	1927	4,106,840	2,708,350	2,337,572
June,	1927	4,467,148	2,744,363	2,374,345
Balloon Inner Tubes				
June,	1926	4,844,588	2,465,646	1,993,353
May,	1927	5,830,272	2,907,364	2,342,781
June,	1927	6,256,281	2,794,164	2,328,152
High Pressure Cord Casings				
June,	1926	4,503,647	1,789,752	2,138,057
May,	1927	4,685,780	1,867,667	1,805,930
June,	1927	4,407,054	1,884,149	2,202,930
High Pressure Inner Tubes				
June,	1926	10,337,404	2,162,154	3,180,465
May,	1927	7,962,224	2,145,654	2,262,496
June,	1927	7,137,616	1,935,666	2,796,094

Bart J. Ruddle

MILWAUKEE, Aug. 17—Bart J. Ruddle, for 18 years secretary of the Milwaukee Automotive Dealers Association and manager of every Milwaukee show since its inception, died Wednesday. He was 63. Mr. Ruddle served as first secretary of the National Automobile Dealers Association.

G.M. Sales to Users Show 33% Increase

July Total is 134,749 and Seven Months Shipments Rise to 975,230

NEW YORK, Aug. 17—General Motors Corp. continues to maintain its ratio of sales gains over last year's marks. Sales to users by dealers in July were 134,749 cars and trucks, an increase of 33 per cent as compared with July, 1926, when such sales were 101,576. In line with the seasonal trend, there was a drop of about 15 per cent from the June total of 159,701 units.

Shipments by manufacturing divisions to dealers in July were 136,909 vehicles against 87,643 in July last year, an increase of 56 per cent, with a drop of about 12 per cent from the June total of 155,525.

Sales to users for the first seven months of 1927 show a gain of over 35 per cent over the corresponding period a year ago, while sales to dealers registered a gain of about 41 per cent.

Comparisons follow:

	Sales to Users		Sales to Dealers	
	1927	1926	1927	1926
Jan.	81,010	53,698	99,367	76,332
Feb.	102,025	64,971	124,426	91,313
Mar.	146,275	106,051	161,910	113,341
Apr.	180,106	136,643	169,067	122,742
May	171,364	141,651	173,182	120,979
June	159,701	117,176	155,525	111,380
July	134,749	101,576	136,909	87,643
Total	975,230	721,766	1,020,386	723,730

Dealers Increase Contracts 25%

SPOKANE, Aug. 16—Willys-Knight and Whippet dealers in the Inland Empire, including eastern Washington, northern Idaho and western Montana, have signed contracts to sell 25 per cent more cars during the coming year than during the current year. This announcement was made by Arnold Reading, manager of Transport Motor company, distributors in this territory, after the close of a series of dealer meetings at which recontracting of territory was closed. All territory has again been contracted.

1000 Airports by Jan. 1 Predicted in Washington

WASHINGTON, Aug. 18—A prediction that there will be "close to 1000" airports throughout the country by Jan. 1, 1928, and that 84 cities, with a population of 24,000,000, will be served by air mail by that time, was made this week by the aeronautics division of the Department of Commerce.

The Post Office Department also announced that air mail receipts during the past three months have shown an unprecedented growth, due to the impetus of Lindbergh's and the other trans-Atlantic flights. Receipts in July were 16.3 per cent over May. June receipts were 19.8 per cent over May.

The most immediate and necessary adjunct for the expansion of civil aeronautics, the Department of Commerce announces, is the presence in every large city of an adequate airport, and the department is seeking to encourage these as municipal enterprises.

Harriman Negotiates for Peugeot Interest

NEW YORK, Aug. 18—Negotiations for a substantial interest in the Peugeot company by W. A. Harriman & Co., investment bankers here, have been confirmed but it was stated that the deal is in a formative stage. Paris advices indicate that the Harriman interests plan to increase the capital of the Peugeot company to about 400,000,000 francs to enable the company to meet Citroen competition. The Peugeot capital now is about 60,000,000 francs.

The present negotiations are the first moves of the Harriman interests to enter French industry, or the automotive industry here or abroad. There is no intention to bring a branch of the Peugeot company here, it is declared, but rather to place the company in better position to develop sales in the European market. The Peugeot company was formed in 1896 and is entirely under French control at the present time.

July Rubber Consumption and Importations Gain

NEW YORK, Aug. 16—Crude rubber consumption in the United States totaled 29,219 tons in July, an increase of 1642 tons or 5.9 per cent over the same month last year. Importations were 38,667 tons, a gain of 4.2 per cent. Stocks on hand July 31, 1927, were 98,469 tons against 64,896 in July of last year, while stocks afloat were 40,587 against 38,344 a year ago.

In the first seven months of 1927, crude rubber consumption in the United States totaled 231,278 tons, an increase of 16,789 tons or 7.8 per cent, while importations amounted to 265,517 tons, a gain of 19,793 tons or 8 per cent.

The large gain shown in crude rubber stocks this year over last is partly accounted for by greater use of reclaimed rubber in manufacturing.

Cooper Succeeds Woodin

NEW YORK, Aug. 13—Curtis C. Cooper, president of General Motors Acceptance Corp., was named a director of General Motors Corp. this week, taking the place made vacant by the resignation of W. H. Woodin, president of American Car & Foundry Co.

New Peerless to be Announced

CLEVELAND, Aug. 17—Peerless Motor Car Corp. will soon announce models for 1928 according to a factory statement. The changes consist mainly in a general refinement of the line.

Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co.*

NEW YORK, Aug. 16—Fundamental business conditions remained steady during the past week despite the sudden technical shake-up experienced by the stock market. Trade indications point out that wholesale goods are a bit more active than those in the retail field, though both lines are encouraged over the fall outlook of increased returns from the major crops. Following the recent lowering of Federal Reserve rediscount rates bond prices have recovered while sterling exchange has risen to the year's highest levels.

PETROLEUM OUTPUT

Daily average production of crude petroleum for the week ended Aug. 6 totaled 2,577,150 bbl. which is a decrease of 8950 from the peak figure of 2,586,100 bbl. reported a week earlier, though considerably higher than the output of 2,141,250 bbl. during the corresponding period a year ago.

FREIGHT CAR LOADINGS

Railway freight loadings for the week ended July 30 numbered 1,045,621 cars, as compared with 1,012,424 cars a week earlier and 1,095,997 cars in the like period last year. Car loadings for the year to date total 30,262,123 as against 30,222,910 in 1926.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices for the past week fell to a new low for the year at 135.1 as compared to the figure of 138.7 for the preceding week and the previous low point of 137.9 reached for the week ended July 24.

BANK DEBITS

Bank debits to individual accounts reported to the Federal Reserve Board for the week ended Aug. 10 were 7.1 per cent below the total for the week previous though 8.3 per cent higher than during the corresponding period a year ago.

FEDERAL RESERVE REPORT

For the week ended Aug. 10 the Federal Reserve banks reported declines of $21,400,000 in holdings of bills and securities, $39,500,000 in total deposits, $8,100,000 in total reserves, and $4,000,000 in Federal Reserve note circulation. Holdings of government securities increased $13,000,000 while bills purchased in open market were $2,200,000 lower.

Member banks for the same period reported increases of $140,888,000 in loans, $26,834,000 in borrowings from Federal Reserve banks, $142,450,000 in demand deposits. Investments of the member banks fell $48,525,000.

The rate for call money held at 3¾ per cent last week reflected an easier tone than that prevailing a week earlier. Time loan and commercial paper rates were also lower at 3¾ to 4½ per cent and 3¾ to 4¼ per cent respectively.

Chevrolet Extends Junking Plan to Include All Makes of Cars

Factory Will Allow Dealers $50 or $35 on Vehicles Scrapped But Sets Up Ratio of One to Every Ten New Chevrolets Sold

DETROIT, Aug. 15—Chevrolet Motor Co. has just extended its junking plan to cover all makes of cars in all parts of the country, it was learned here today. Hitherto restricted to Chevrolet cars, Chevrolet dealers may now obtain factory allowances for any makes of cars they desire to scrap, within the limits set by the plan.

In its earlier form the plan has been in operation for about eight months, and the decision to extend it is considered evidence that the executives of the Chevrolet company have been greatly pleased by the preliminary working of the idea.

Since the original Chevrolet junking plan was made known to the industry through this publication, there has been general interest in the policy, which is acknowledged to be one of the most radical steps ever taken by an automobile factory for the relief of its dealers' used car problems. The pioneering courage of W. S. Knudsen, president of the company, and of R. H. Grant, its forceful vice-president in charge of sales, has been widely admired even by those who professed skepticism regarding the merits of the junking program.

In its newest form, the plan provides for the junking of one used car of any make for every 10 new cars sold. The dealer, of course, may junk more cars but he can only receive factory allowances on the one to ten ratio. The factory allows him $50 for every Chevrolet junked under the plan and $35 for other makes of car.

The junking is done at stated periods under supervision of a member of the Chevrolet field force, and outright destruction of the car is required, as the Chevrolet company wants to make sure the "junker" does not again find its way back into service and furthermore does not want any of parts to be used for replacement.

The plan is designed, therefore, to help Chevrolet dealers get rid of used cars that are unprofitable to sell and uneconomical to operate, yet which persist in coming in on trades. Dealers lose money on such cars and salesmen do not like to handle them because of the small commission involved in a sale. Therefore, says the Chevrolet company, remove them entirely from the market.

Chevrolet Production Exceeds All of 1926

DETROIT, Aug. 13—Total production so far this year, at the plants of Chevrolet Motor Co., yesterday exceeded the total 1926 production by 1276 cars. Total 1926 production was 732,147 units, and yesterday's production brought the 1927 total to 733,420 units. August schedules call for a total production of 89,474 units, which exceeds the July, 1927, production by 2341 cars.

Body Makers Join Truck Tour

ST. LOUIS, Aug. 15—A Chevrolet truck caravan consisting of 28 units, each with a different body, all mounted on the standard Chevrolet truck chassis, started from the Chevrolet factory here today to make a 2100-mile tour of the St. Louis district, which will occupy six weeks.

The caravan will be in charge of H. H. Miller, truck sales representative connected with the St. Louis branch, who will act as pilot, travelling at the head of the procession in a Chevrolet landau. The trucks are to be entered by body builders in the St. Louis district, who will also provide a driver and salesman riding in the truck.

An advance man, also in a Chevrolet, will travel several hours ahead of the caravan, working with the dealers in the towns visited to prepare them to make the most of the visit of the caravan to their towns.

Among the bodies mounted on the Chevrolet chassis that will take part are panel, express, platform, stake, grain, ice and coal, farm, each body showing a special design adapted precisely to the use specified. There will also be a dump truck, a fire truck and a gasoline tank wagon.

Opposes Direct Sales

CINCINNATI, Aug. 13—What is termed unfair practice by manufacturers and distributors of tires and batteries in selling their merchandise direct to commercial accounts instead of marketing the product through their respective dealers, culminated in the adoption of a resolution by the Cincinnati Tire & Battery Dealers Association asking that distributors and manufacturers discontinue this practice.

Starts Plane Production

LONG BEACH, CAL., Aug. 15—The International Aircraft Corp., which was organized last February, is now in active production, turning out two planes a week. The company is financed by a number of Long Beach capitalists. L. C. Simmel is president; H. A. Speer, vice-president and sales manager; W. F. Meyer, general manager, and Edwin M. Fisk, chief engineer. The plane built by the International Aircraft Corp. is of the open cockpit biplane single bay type, designed for either an OX or Hisso 150 hp. engine. The OX edition is fitted as a three seater, with an extra passenger provided in the Hisso engined type.

Kelly-Springfield Truck Considers Plant Action

SPRINGFIELD, OHIO, Aug. 15—Edward M.-P. Murphy, who was recently elected president of the Kelly-Springfield Truck & Bus Corp., makes the following statement concerning the affairs of that company:

"During the period that I have been in charge of the company, a thorough study has been made of the business; its prospects and financial condition. The question which we are now considering is a matter of policy—whether we wish to continue independently in business or dispose of our business to other interests. It is recognized by the officers that it is of considerable importance to Springfield and community that the plant be continued in operation. Therefore every effort is being made to continue the business in that city, and action is now being taken by the officers to interest responsible parties in all of the properties of the company, with a view of disposing of them as a going concern, or otherwise.

"Sales of surplus machinery and materials will be made from time to time, but no final decision as to the ultimate disposition of the company's properties will be reached until the relative advantages and disadvantages of sale and operation have been more fully developed.

"The company is in sound liquid condition, and the management is in position to proceed with whatever action it decides to take."

Hal-Ful Truck in Production

CANTON, Aug. 15—Production has been started at the plant here of the Hal-Ful Truck Co. and output now is 50 trucks a month. G. A. Rudy has been named general sales manager. The company manufactures a complete line of truck chassis. In addition the company will sell at retail a full line of truck equipment including bodies, cabs, hoists, wrenches and an extensive line of truck parts.

White Gets Cuban Order

CLEVELAND, Aug. 13—The White Co. has received an order for 40 trucks to be in the good roads program in Cuba. They were sold to the Compania Cubana de Contratistas of Havana, which is already working on a contract for the new Central Highway through the provinces of Matabzas and Santa Clara.

New and Larger Olds Confirmed by Reuter

Will Introduce Companion Line to Present Six Early in Coming Year

DETROIT, Aug. 13 — Confirming what has been common knowledge in the trade and industry for some time, I. J. Reuter, president and general manager of Olds Motor Works, let it be known this week that a new and larger car will be added to the Oldsmobile line early in 1928. As the present line will be continued, Olds will be the third General Motors division in recent times to add another car in a different price class so as to give dealers a more diversified line.

The recently announced $3,000,000 expansion program of Oldsmobile will provide facilities for production of the new car as well as a larger output of the Oldsmobile Six. Contracts have been let for the greater part of the work, the program including a second engine plant which will adjoin and duplicate the present engine plant of the company. Indications are that this new building will turn out the engines for the new car.

Details regarding the new car are not available at this time, but it is known that Olds officials and engineers have been working on the addition to the line for a long period and that experimental cars have been driven hundreds of thousands of miles on the General Motors Proving Ground under all possible conditions of road and weather.

Chandler Offers Sedan

CLEVELAND, Aug. 13—Chandler-Cleveland Motors Corp. has introduced a Royal six sedan finished in Holyoke blue or hemlock. Upholstery is of silver gray mohair. Equipment of the rear compartment includes reading lights, vanity and smoking sets, silk toggle grips and silk shades on the rear windows. A bronze rail with hand grips is provided for a robe. Hardware is in statuary bronze finish. The instrument board is finished in circassian with instruments grouped under glass in a bronze panel. Instrument board equipment includes an electric clock and a combination cigar lighter and emergency lamp. The new car is priced at $1,795.

Wants Its Gasoline Green

WASHINGTON, Aug. 16.—All gasoline sold in Panama, henceforth, must be colored green in order to prevent its misuse, the Canal Zone government has decreed. Experiments in this coloring have been made and it was found that one gallon of a particular dye would color 1,500 gallons of gasoline, a suitable shade of green, without changing the quality of the gasoline for automobile consumption.

Motor Vehicle Men Resume Light Study

HARTFORD, CONN., Aug. 13—Members of the lighting committee of the Eastern Conference of Motor Vehicle Registrars are to meet here Tuesday to resume their deliberations over headlights, equipment, adjustments, etc. It promises to be an important meeting. It is understood that there will be some discussion over the use of single and double filament adjustments, as some state officials favor one type exclusively and others believe in the use of both. This will bring together some of the men who read papers at the Society of Automotive Engineers convention at French Lick Springs in May, and who were on opposite sides of the fence on the question.

Ryan Airways Reorganized as B. F. Mahoney Company

SAN DIEGO, CAL., Aug. 15—Reorganization of the Ryan Airways, builders of the Spirit of St. Louis, Lindbergh's transatlantic plane, and mail planes, has been completed. The new company will be known as the B. F. Mahoney Aircraft Corp., of San Diego. Capitalization has been raised to $500,000. Plans of the new company call for a production schedule of one plane a day by May, 1928, these planes being known as Mahoney planes, instead of Ryan. Directors of the company include B. F. Mahoney, president, Richard T. Robinson, Jr., Mrs. Jennie Mahoney, A. J. Edwards, director of sales, and W. H. Bowlus, factory superintendent.

Due largely to its recent successes, the company, according to Mr. Mahoney, has been forced to turn down about five out of every six orders received due to inability to meet the demand.

Hungary Offers Fuel Bill

WASHINGTON, Aug. 19—As an encouragement to the Hungarian alcohol industry, the Hungarian minister of finance has submitted to Parliament a bill for the obligatory admixture of alcohol in gasoline for automobile fuel. The bill also would fix the price of alcohol so used for this purpose and would not increase the price of motor fuel.

China Shipments Gain 32%

WASHINGTON, Aug. 13—Automotive imports into China for the first six months of this year show an increase of 32 per cent over the imports the first six months of last year, according to cable dated July 29, to the automotive division, Department of Commerce.

Bay State Surveys Insurance Workings

Changes in Compulsory Law Seen Possible But Radical Revisions Unlikely

BOSTON, Aug. 15—Insurance Commissioner Wesley E. Monk is having compiled statistics to show how the compulsory automobile insurance law is working out in Massachusetts. When completed the report will furnish a basis to make any changes necessary in the law next year. There is a feeling that radical changes are due, but according to Commissioner Monk this seems unlikely. He believes that on the whole the present rates are working out fairly well, and that it would be unwise to work out any radical changes, at least until the act has been in operation for a longer period.

When more experience is available and there is need of changes the commissioner will make such recommendations to the legislature. There is a chance, however, that some changes in the territorial rates may be recommended, with the results that certain towns will be placed in higher and lower hazardous rate zones, and possibly some rates may be modified slightly. Fundamental changes, however, in view of what has been learned through the preliminary investigation are unlikely.

Unofficially it has been learned that the lower rated or small cars, as an underwriting class, have proved to be the most hazardous. Some insurance agents throughout the state hope that there will be some reallocations in the make-up of the expense factor, which will allow them a slight increase in commissions. Just what action on this score may be taken is undetermined.

Lancaster Tire & Rubber Adds Lower Priced Line

COLUMBUS, Aug. 15—Lancaster Tire & Rubber Co. will soon put on the market a new line of moderately priced tires under the trade name "York." The new line is to be produced in both high pressure and balloon types in sizes up to 33 x 4 in high pressure and up to 31 x 5.25 in balloon casings. To provide facilities for the manufacture of the tires and also to increase the output on the standard line additional vulcanizers will be installed, increasing the capacity about 40 per cent.

Albertson to Build

SIOUX CITY, IOWA, Aug. 13—The Albertson Co., manufacturer of automobile tools, has announced plans for the construction of a $100,000 addition. The new plant will be 50 x 140 feet, four stories high with a basement. The new unit will adjoin the present plant at the rear.

Men of the Industry and What They Are Doing

Rengers Returns as Moon General Sales Manager

F. H. Rengers has returned to the Moon Motor Car Co. as general sales manager after conducting a nine months' survey of conditions in the Chicago territory during which time he was in charge of Moon headquarters there. Mr. Rengers has been in the Moon organization 14 years, starting as assistant to the late J. W. Moon, founder of the company. He rose to the position of sales manager through a series of promotions earned by his close application to duty.

For the next several months Mr. Renger will devote his time largely to a further study of field conditions and to increasing Moon representation particularly in the eastern territory. Outlook for business in the next five months is very encouraging, he said, despite drawbacks which the industry has experienced in the past several months.

German Chemist Coming to U. S.

Dr. Alwin Mittasch, head chemist of the German Dye Trust and one of the leading German inventors of liquefied coal, synthetic alcohol and new mixtures of motor fuel, will leave Germany soon for a visit of several months in the United States. He will make a special study of the automotive and gasoline industry of this country in collaboration with American scientists and members of the Society of Automotive Engineers.

Hyman Takes British Post

Herbert R. Hyman, well-known in the industry through his connection with Cole Motor Car Co. and the Stutz Motor Car Co. of America, Inc., and who in late years has been identified with the Homer McKee Co., advertising agents, at Indianapolis, has been appointed director of merchandising of the Keystone Knitting Mills, Ltd., London, England, and will leave for Europe soon to take over his new duties.

Chapin Back From Abroad

Roy D. Chapin, president of the National Automobile Chamber of Commerce, who has returned to the United States from an extensive trip abroad, reports the automobile industry in all countries joining in a united effort to foster motor transportation.

H. C. Webber Marries

Howard C. Webber, assistant treasurer of Selden Truck Corp., was married recently in New York City to Miss Edna E. Balz of Richmond Hill, L. I. Mr. Webber about 10 months ago assumed charge of the financial department of the Selden company.

Joachim Awarded 1927 Diesel Prize

W. F. Joachim, mechanical engineer, Langley Memorial Aeronautical Laboratory, has been selected to receive the Rudolph Diesel Award for 1927, consisting of a suitable certificate and a cash prize of $100, for his paper, "Oil Spray Investigations of the National Advisory Committee for Aeronautics." The paper was presented at the Oil Power Week meeting of the American Society of Mechanical Engineers.

Brand Joins Baldwin

John Brand has resigned as supervisor of control and director of production planning of Indian Motocycle Co., to become assistant factory manager of the Baldwin Chain & Mfg. of Worcester, Mass., of which Frank J. Weschler, formerly president of the Indian company, recently became head. Mr. Brand had been with the Indian company eight years, and previously held positions with the Bosch and Westinghouse companies.

Newton With Chain Products

R. H. Newton has been appointed factory representative of the Chain Products Co. in New England and parts of New York, Pennsylvania and West Virginia. For three years Mr. Newton was southern district manager in the accessory division of the Gates Rubber Co., and formerly was assistant manager of the accessory division of the Dayton Rubber Mfg. Co.

Graham Sees Trade Sound

Utmost confidence in the immediate future of the automobile industry was expressed by Robert C. Graham, one of the three brothers who purchased the Paige-Detroit Motor Car Co. recently, in the principal address at a meeting of Paige dealers in Cincinnati territory. Mr. Graham has just completed a trip through the central and far west.

G. M. Export Officials Sail

W. T. Whalen, vice-president and general manager of the General Motors Export Co. will sail Aug. 13 on a visit to the South American plants. R. K. Evans, vice-president and regional director for Europe, accompanied by M. F. Lawrence, manager of the general manufacturing department, are now in England. Keith Wood, managing director of General Motors International A/S at Copenhagen, is returning there after a month in the United States.

Salesmen to Organize National Association

WASHINGTON, Aug. 17—Preliminary steps for the organization of the National Automotive Salesmen's Association, with headquarters here, were taken this week by a group of nationally known automobile men, including agents, distributors and salesmen.

The sponsors of the idea feel that such an organization will bring to the automotive salesmen of the country a tangible assistance, through a free interchange of plans, ideas and methods.

The organization committee is composed of L. L. Britt, Mott Motor Co., Hupmobile distributor; Clark Allison, Horner Buick Co., and Phil Reilly, Foss-Hughes Co., distributor of Pierce-Arrow. In order to further the plan Philip E. Banfield, a veteran in the Washington automotive field, was appointed to take active management of the development of the organization.

In announcing the "birth" of the National Automotive Salesmen's Association, its sponsors said: "It is the hope of the sponsors that the organization will assume a position in the automotive field along with the National Automobile Chamber of Commerce, the American Automobile Association, the National Automobile Dealers Association, the Automotive Equipment Association and the Society of Automotive Engineers."

The potential membership of such an organization, it was roughly estimated, would be upward of 250,000.

Pierce-Arrow Honors Retling

Edward Retling, chief tester of the Pierce-Arrow Motor Car Co., has been awarded a 25-year gold and diamond service medal by President Myron E. Forbes. In 1908, then six years in Pierce-Arrow service, Mr. Retling, with Johnny Williams, for many years a well-known New York salesman, won the Hower tour trophy in Pierce-Arrow runabouts.

Seiver With Bus Division

Frederick Seiver has been appointed statistician of the motor bus division of the American Automobile Association, coming to the association from the office of the Port Authority of New York where he was responsible for economic and statistical studies upon transportation in the metropolitan area.

Piersol Now Consultant

Robert J. Piersol, formerly research engineer for the Westinghouse Electric & Mfg. Co., has opened a consulting engineering office at 3617 Dawson St., Pittsburgh, where he will specialize on the installation and operation of chromium plating equipment.

Bartsch Takes New G.M. Export Post

Resigns As Sales Manager of American Bosch to Enter Foreign Sales Work

SPRINGFIELD, MASS., Aug. 15—Alfred H. Bartsch, general sales manager of American Bosch Magneto Corp., has resigned to join General Motors Export Co. He has been named a regional sales manager and will leave Springfield Sept. 1 to take up his new duties at the export company's New York headquarters pending assignment to territory.

Mr. Bartsch is one of the best known sales executives in the industry. He came to Springfield with the American Bosch company as one of a group of officials who have been very successful in establishing the company in its present strong position. His connection with Bosch has covered almost 20 years in all, having been connected with the original Bosch company since 1910.

In his first two years of service Mr. Bartsch organized the Bosch accessory and replacement sales division and also created the authorized service station plan. His success in this work led to his appointment as advertising manager in 1911, continuing, however, the direction of the trade sales departments. As advertising manager he directed the campaigns in 1912 to 1914 when Bosch sparkplugs and magnetos dominated the Vanderbilt' Grand Prize and other racing events.

Was Merchandising Counsel

With the entrance of the United States into the war, Mr. Bartsch left the Bosch company to join the McLain-Simpers Organization, Philadelphia, advertising and merchandising counsel. While there he handled the Bosch account on a consultant basis and became advertising and merchandising counsel when the Alien Property Custodian took over the property. With the return of the plant to private ownership in 1918 he returned as general sales manager.

British Registration Shows 176,000 Increase

WASHINGTON, Aug. 16—Automotive registration in Great Britain as of June 1, totaled 1,756,000 vehicles, and represented an increase of 176,000 for the year, according to cable to the Department of commerce from Trade Commissioner W. M. Park at London.

Of the total, 727,000 are passenger cars—an increase of 100,090 for the year; 635,000 were motorcycles—an increase of 49,000, and 271,000 were so-called commercial vehicles—an increase of 27,000 during the year. Automotive taxes, collected from licenses, for the year totaled $87,259,400, an increase of about $3,000,000, compared with the previous fiscal year.

Garageman Gets It Once Every 18 Times

WASHINGTON, Aug. 17—Effective July 1, 1928, all issues of bank notes, both green and yellow backs, will be one-third smaller than the present size of the filthy lucre, the Treasury Department announces.

The reason assigned by the department is that because of the number of automobiles and the necessary large number of garages and service stations throughout the country, and the large amount of money that goes through the oil industry's employees' hands, which are invariably greasy, that its greenbacks and other paper money does not stand the necessary wear and tear. By making the notes one-third smaller the department believes that it can increase the life of such bills.

Experiments made by the Treasury Department show that every 18 times that a bill changes hands, it passes through the hands of a garageman or oil station employee one time.

Airplane Type Engine Developed by Jordan

CLEVELAND, Aug. 15—Jordan Motor Car Co. is about to announce the incorporation of a revolutionary new engine with "characteristics strikingly similar to those of the finest airplane engines," in a new Jordan eight, Edward S. Jordan, president, has revealed.

Officials at the Jordan plant here declined to reveal whether the engine is of the radial type, which persistent reports have said is about to be incorporated in American cars.

The engine has been quietly developed for several months by Jordan, Continental Motors Corp. and Stromberg Carburetor Co. It will be of light type, have high speed characteristics, show greater fuel economy, and giving 33 per cent increase in horsepower and 21 per cent increase in torque. Not a pound of weight will be added to the car. Production will start soon.

Warren-Nash Opens Building

NEW YORK, Aug. 15—Warren-Nash Motor Corp. today opened, with approximate ceremonies, a new building at Broadway and 133rd St., which cost $1,500,000 and is eight stories in height. Although constructed primarily for maintenance of Nash cars in the New York territory, there is a showroom on the first floor which will carry a full line of new Nashes as well as 40 to 60 used cars.

Blunderbus Washer to be Sold to Trade

Company Formed in New York to Handle Distribution to Operatives

NEW YORK, Aug. 16—The Blunderbus automobile washing system, the outgrowth of a device already extensively sold to fleet owners and to automobile factories, will be marketed to the trade by a new organization, Blunderbus Auto Laundry Sales Co., which is now in process of formation and has temporary offices at 551 Fifth Ave.

The manufacturers of the cleaning unit, Central Engineering & Sales Co., St. Louis, are cooperating with H. D. Draper of New York, in the organization of the selling company. Mr. Draper will be president, and Edward W. Uhry, vice-president. Mr. Uhry is president of the St. Louis concern.

Fink-Dumont-White Co., New York, will continue to sell to fleet owners. As sold by this company, the Blunderbus system is used where a hot water and compressed air supply is available.

For marketing to the trade, a 30-hp. compressor has been added and an instantaneous heater of 10-gal. capacity for water supply has been developed by the American Radiator Co. The complete unit will be sold only for installation under the name "Blunderbus Auto Laundry."

Complete cleaning and drying of a car in 10 minutes is claimed for the system. A single nozzle delivers hot water at high pressure, but in an atomized spray so as not to injure the paint. By an adjustment the same nozzle produces a vacuum for the drying operation.

Six Months' Exports Establish New High

WASHINGTON, Aug. 17—All previous records for automotive exports, during any six months' period, were broken the first six months of this year, according to revised export figures announced by the Department of Commerce.

Total automotive exports were $221,760,753. This is a gain of 21.8 per cent over the exports the first six months of last year, which totaled $182,115,784. Passenger car exports increased 25.6 per cent, amounting to $117,143,562, compared with $92,279,-339 exported in the first six months of last year.

Increased exports were recorded in electric trucks, passenger cars, parts of motor vehicles, except engines and tires, motor boats, marine engines and air craft and parts. Declines were recorded in trailers, automobile engines, motorcycles, cycle parts and aircraft engines. The largest gain was in trucks and buses, showing an increase of 56.1 per cent in value this six months compared with last year's similar period.

Sale of Ford Planes by Car Dealers Eventual Development, Declares Mayo

DETROIT, Aug. 15—Ford airplanes will eventually be sold through the Lincoln dealer organization and probably through some Ford dealers, according to William B. Mayo, chief engineer of Ford Motor Co. Mr. Mayo's statement came in the course of a conversation dealing with what he considers an inevitable tie-up between the automobile and aircraft industries.

"It will be easier to distribute planes through established channels rather than to build up new dealer organizations," Mr. Mayo declared. "The automobile salesman is fully capable of handling the sale of airplanes with a little additional training, and, therefore, a separate sales force in the dealer establishments would not be necessary.

"Developments along these lines only awaits the quickening of public demand for air travel," Mr. Mayo continued. "Of course widespread distribution will be mainly in the smaller ships; large transports will probably continue to be sold direct by the factories."

The Stout Metal Airplane Division of Ford Motor Co. will soon start production of a single-engined, five-passenger, closed-cabin, all-metal monoplane.

Airmail Line Opens Passenger Service

KANSAS CITY, Aug. 15—Regular air passenger service from Kansas City to Chicago and from Kansas City to Dallas, Tex., will be inaugurated by National Air Transport, Inc., Sept. 1. Announcement of the date for the start of the service was made here by Col. Paul Henderson, former assistant postmaster general and vice-president and general manager of the company.

The schedule from Kansas City to Chicago is 5 hours and 23 minutes, and 6 hours and 17 minutes to Dallas. Stops between Kansas City and Chicago will be made at St. Joseph, Mo., and Moline. Stops between Kansas City and Dallas will be made in Wichita, Poca City, Okla., Oklahoma City and Forth Worth. The fare is 10 cents per mile. The distance from Kansas City to Chicago is 446 miles and to Dallas 544 miles.

Only three passengers will be carried in a plane. Each passenger will be allowed 25 lb. of baggage free. Additional baggage will be carried at $1 per pound. The passenger service is in connection with the air mail service operated by the company.

Passengers will not be required to wear any special clothing or headgear as the compartments of the planes will be heated comfortably.

Jordan Reports Profit $86,773 in June Quarter

CLEVELAND, Aug. 15—Jordan Motor Car Co. reports for quarter ended June 30, 1927, net profit of $86,773, after depreciation, charges and Federal taxes, equivalent after allowing for 7 per cent preferred dividend requirements to 56 cents a share earned on 126,000 shares of no par common stock. This compares with net loss of $112,672 in preceding quarter and profit of $125,382 before Federal taxes in second quarter of 1926.

Net loss for the first half of 1927 amounted to $25,899 against profit of $271,763 before Federal taxes in the first six months of the previous year.

The company has established an export department to handle increased demand from abroad. The new little custom Jordan has scored heavily in the foreign field, according to factory statement.

Bendix Brake Takes Over Leland-Gifford Rights

CHICAGO, Aug. 15—The Bendix Brake Co. has acquired rights covering the brake developments of the past five years evolved by the Leland-Gifford Co., Worcester, Mass. It is the intention of Bendix to include this in its extensive brake research program. Leland-Gifford engineers have already done a great deal of work on a self-energizing, or servo type of brake, which is something like the Bendix brake, and developed to a useful degree hydraulic, flexible cable and other controls, all of which fit directly into the Bendix research program.

Hydraulic Clutch Proves Satisfactory Under Test

KANSAS CITY, Aug. 15—A hydraulic clutch and variable speed transmission which the inventor claims gives to internal combustion engines the flexibility of a steam engine, has been invented by E. H. McKinney. The clutch-transmission has been given exhaustive tests at the Kansas State Agricultural College, by L. M. Jorgenson, instructor in electrical engineering and W. W. Carlson, professor of shop practice. These tests were highly satisfactory and it is understood several motor car manufacturers now are investigating the invention.

China Fixes New Tariff

WASHINGTON, Aug. 13—Effective Sept. 1, an import tariff duty of 30 per cent will be levied on all motor vehicles and accessories, excepting motor trucks over one-ton carrying capacity and motor buses equipped to carry more than eight passengers, imported into the Nationalist territory of China. Word to the effect has been sent to the Department of Commerce by the commercial attache at Shanghai. Under the new edict of the Nationalist Government at Nanking, automobiles are classified in Class B as luxuries. Motor buses carrying less than eight passengers are assessed a duty of 12½ per cent.

Peru Proposes Revision of Imports Duty Basis

WASHINGTON, Aug. 17—A change in the amount and basis of import duties on automobiles, chassis, motor trucks and tractors, imported into Peru is under discussion by that government and the following recommendations have been made by the Peruvian congressional committee, according to cable from O. C. Townsend, commercial attache at Lima, to the Department of Commerce:

Passenger car import duties to be changed from .60 and .90 peso, according to weight, to 20 per cent ad valorem, based on factory price for assembled cars and 12 per cent ad valorem, same basis for dissembled cars; chassis, now dutiable at .15 peso per gross kilo, to 15 per cent ad valorem; trucks, now dutiable at .20 peso without carriage furnishings, and .30 peso per gross kilo complete, be subject to an ad valorem rate of 7½ per cent ad valorem, and that exemption from duty be granted for tractors, now dutiable at .03 peso per gross kilo.

The net result of the proposed change will be to slightly increase duties on passenger car chassis and trucks but eliminate that on tractors. The peso at the present time is worth $0.72.

Norway Increases Bus Use

WASHINGTON, Aug. 15—The development of motor bus traffic in Norway is growing steadily the Department of Commerce is advised by the Norwegian road director through the American consul at Oslo, in a cable dated Aug. 3. A survey just completed shows that on Jan. 1, 1927, there were 665 motor bus routes in the country, operating 1104 buses. In 1919 there were 158 lines operating 300 buses. At the present time motor bus traffic is characterized as one of Norway's "vital parts in the country's transportation system."

Tractor Exports Increase

WASHINGTON, Aug. 13—Tractor exports from the United States during 1926 totaled 50,000 wheel type and 1200 track-laying type, having an aggregate export value of $36,000,000, according to figures issued by the implement division of the Department of Commerce. The 1926 exports amounted to $4,000,000 increase over the 1925 exports. In commenting on the figures the department says that "the supremacy of the American tractor is undisputed."

Sloan Sees Business Recovering in Fall

Says Increased General Motors Earnings Due to Larger Sales Volume

HARTFORD, CONN., Aug. 13—A steady and increased growth of General Motors Corp. was predicted by President A. P. Sloan, Jr., at a dinner tendered him and a group of General Motors officials while on a visit to New Departure Mfg. Co. Mr. Sloan said General Motors had profited by experiences back in 1920 and had organized itself to a point where it could meet any competition that might arise.

Mr. Sloan spoke on the past, present and future of the corporation and painted an optimistic picture of what had been done and what is being done to insure a maintenance of the present strong position. He believed that the slight seasonable let-up in business at this time would show a quick recovery in the closing months of the year as far as General Motors is concerned.

The evenings for the closing six months will undoubtedly be as great, he said, as they were for a similar period last year and probably show some improvement. He spoke of the high earnings of the corporation the first six months of the year and said that he wanted to correct an impression that the large earnings indicated an increased profit on the car units produced.

"This is not true," said Mr. Sloan, "our profits per car unit are less than formerly, if anything, but we are constantly increasing the volume of our sales. Futhermore, only a little more than 60 per cent of these earnings come from the profit derived from the sale of cars. We have other activities that are making money for us and our stockholders."

The dinner was tendered Mr. Sloan and his associates by the directors and heads of departments of the New Departure Company. The Meriden and Bristol plants of the company were inspected during the day. Chief Engineer T. C. D. Crow gave an illustrated talk on ball bearings.

Restrains Truck Overrating

WASHINGTON, Aug. 13—An injunction restraining the German representative of a big American truck manufacturer from overrating his truck capacity has been issued by a German court, according to advices to the U. S. Department of Commerce. The suit to enjoin the local representative of the American manufacturer in Berlin was brought by the Federal Association of German Automobile Manufacturers. In the United States the truck is rated as a 1½-ton model, but the German representative advertised the truck as a "1½ to 2-ton truck." This the German courts held unfair competition.

Engine Tests Show Temperature Effects

WASHINGTON, Aug. 17—A series of temperature tests for automobile engines, made by the Bureau of Standards at the behest of the National Automobile Chamber of Commerce, the American Petroleum Institute and the Society of Automotive Engineers, show two unmistakable results, the bureau announces.

One is that there is a marked difference on engine acceleration as the result of warming the intake manifold, and the other is that the water jacket temperature has but slight effect on acceleration of speed. The tests thus far made have been on a 1926 six-cylinder passenger car engine, the bureau announces.

Dodge Brothers 4 Output Increased to 1000 Daily

DETROIT, Aug. 15—Production of Dodge Brothers' new four-cylinder car is being stepped up this week to more than 1000 units daily, marking an advance in the schedule of approximately 25 per cent from last week's level of 800 daily. It is stated that production has been running behind sales since the new four was introduced July 17 and that dealers' stocks are unusually low.

To date the only car introduced in the new line of fours is the sedan. A new coupe has now entered production and next week a cabriolet roadster is scheduled to come off the line.

July Sales Fall 21% in Six Ohio Centers

Total of 7287 Cars Compares With 9210 — Cleveland Shows 1000 Drop

COLUMBUS, Aug. 15—Figures tabulated by G. T. Ford, acting manager of the Ohio council, National Automobile Dealers' Association, on the number of new passenger cars sold in the six most populous counties in Ohio in July, show a decline of approximately 21 per cent from sales in June. In the counties of Cuyahoga, Hamilton, Franklin, Lucas, Summit and Mahoning, from which the figures are taken, there were 7287 new cars sold, compared with 9210 new cars in the previous month.

Cuyahoga county, with Cleveland, reported 3064 cars sold in July, compared with 4022 in June; Hamilton county, with Cincinnati, sold 1154 cars, compared with 1333; Summit county, with Akron, sold 857 cars compared with 1069; Lucas county, with Toledo, sold 730 cars compared with 992; Franklin county, with Columbus, sold 875 cars, compared with 1007, and Mahoning county, containing Youngstown, sold 607, compared with 787.

Velie Signs Dealers

MOLINE, Aug. 13—Velie Motors Corp. reports the signing of five new distributors and 28 dealers up to Aug. 1. The distributors are Paul R. Hardy, Syracuse; Ludwick Motor Co., Winnipeg; Smith & Stanton, Los Angeles; Velie Motor Sales Co., East St. Louis, and Hartsough Motor Co., Omaha.

Fiat Tries Out New 91½ Inch Racing Car With 12 Cylinders in 2 Vertical Groups

PARIS, July 28 (*by mail*)—Speed trials are now being carried out on Monza track, near Milan, Italy, with a 91½-in. Fiat racing car having 12 cylinders in two vertical groups of six. The engine has a single crankcase, with two crankshafts united by gearing. It is understood that this is one of three Fiat cars to be pitted against the American machines in the European Grand Prix at Monza, on Sept. 4.

This is believed to be the first dual vertical 12 used in a chassis, but the general idea is not altogether new. The Fiat company has taken out patents for various groups of engines mounted on a common crankcase and having their crankshafts united by gearing. In one of these patents three six-cylinder engines are grouped, the central set being vertical and the two others having a slight inclination, and a pinion on each crankshaft engaging with a reducing pinion from which the drive is taken. A free wheel device is fitted on each crankshaft, so that in case of stoppage of any one engine it would automatically be disconnected. Before the war a certain number of dual vertical engines with crankshaft connected by gearing were built by Fiat for airship and boat service.

Ettore Bugatti claims that in September, 1915, he took out general patents covering the construction of twin engines on a common crankcase. The Bugatti engine had two vertical groups of eight cylinders, set very close together on an aluminum basechamber and having their crankshafts connected by gearing in the center. This arrangement gave a 16-cylinder engine the length of a straight eight, with only a very slight increase in width. Bugatti states that 5000 of these engines were built in France and 10,000 were produced in America during the war. A record-breaking car with an engine of this general type is understood to be in construction at the present time in the Bugatti shops at Molsheim, Alsace, but it has not been seen on the road.

$5 Dividend Basis Seen on G.M. Stock

Increase From Present $8 Rate Expected Following Action on Split-up

NEW YORK, Aug. 15—It is generally expected in the financial district that common stock of the General Motors Corp., after the 2-for-1 split-up on which stockholders will vote Sept. 12, will be placed on a regular $5 dividend basis. This would be equivalent to increasing the regular rate on the present shares from $8 to $10 annually.

In addition it is expected that the directors, late this year, will authorize an extra dividend on the increased number of shares which will be outstanding after the approval of the stockholders to the split-up. The size of the extra to be declared during the final quarter will, of course, depend upon the earnings for the last half of the year.

For the first six months the corporation reported net profits equal to $14.35 a share on the present 8,700,000 shares of common. It is believed, therefore, that the full year's earnings should be about $25 a share, which on the basis of the corporation's policy of distributing 60 per cent of its earnings in dividends means that a total of $15 a share should be paid this year on the present capitalization. As in the first nine months General Motors will have paid a total of $8 in dividends on the present shares there will be $7 a share to be distributed at the final meeting this year.

If, therefore, the regular dividend is $5 a year on the increased number of shares presently to be outstanding, there would be indicated a regular dividend of $1.25 and an extra of $2.25 to be declared on 17,400,000 shares in the final quarter.

The action of the directors last week was considered to indicate their confidence that the corporation's earning power has been built up to a point where a regular dividend of $5 can be maintained at all times on double the number of shares now outstanding. This would require an annual disbursement of $87,000,000, which would equal 60 per cent of $147,000,000 annual profits on the common. In 1926 the corporation earned $187,000,000 for its common shares, while for the first half of 1927 earnings for the common were nearly $125,000,000.

DuPont Makes No Change

NEW YORK, Aug. 16—The directors of E. I. duPont de Nemours & Co. caused some surprise yesterday by declaring only the regular quarterly dividend of $2 a share on the common stock. As DuPont has usually passed on to its stockholders benefits accruing from its ownership of 1,996,224 shares of General Motors stock, some change in the capital structure of the company was looked for. However, it develops that the authorized stock of DuPont will not permit a two-for-one split-up (such as General Motors announced), on the authorized 5,000,000 of DuPont no par value common stock, of which 2,661,658 shares are outstanding.

U. S. Rubber Earns $3,240,963 in Half

NEW YORK, Aug. 15—For the first half of 1927, United States Rubber Co. reports net income, after all charges and interest, of $3,240,963, equivalent after preferred dividends to 78 cents a share earned on 810,000 shares of common stock outstanding. This compares with $4,915,668 in the corresponding period last year, or $2.85 a share on the common. Neither figure includes any income on rubber plantations owned by the company.

Sales for the first six months of the year amounted to $88,110,626, a decrease of $12,003,360 compared with the corresponding period of last year. This decrease is ascribed by C. B. Seger, chairman, to lower prices for tires. Tire sales, other than to automobile manufacturers, increased in unit volume but the decrease in selling price was about 25 per cent. Unit sales of tires to automobile manufacturers were lower and prices were down 28 per cent.

Stewart-Warner Profit $1,508,878 in Quarter

NEW YORK, Aug. 15—Stewart-Warner Speedometer Corp. reports net income after Federal taxes and all charges of $1,508,878 for the June quarter, equal to $2.51 a share on 599,990 outstanding shares of stock.

In a letter to stockholders, President C. B. Smith, says:

"The financial position of the corporation has continued to improve. Working capital amounts to $12,611,013, with surplus of $6,541,676. Current assets of $14,309,136 compare with current liabilities of $1,698,122. Holdings of cash and marketable securities alone are $5,263,676, and exceed total current and fixed indebtedness. There are no outstanding bank loans.

"Owing to the fact that the financial position is the best in our history and that the prospects for a continuance of satisfactory business are very favorable, it has been decided to retire at once the $700,600 of outstanding 7 per cent preferred stock of our subsidiary, the Bassick Co."

Steel & Tubes Expands

CLEVELAND, Aug. 15—Assets and good-will of the Mohegan Tube Co. and the Pontiac Tube Products Co., Inc., have been purchased by Steel & Tubes, Inc., of New York, whose stock is entirely owned by the Elyria Iron & Steel Co., this city. Through the purchase the service of Steel & Tubes, Inc., will be enlarged.

Financial Notes

Brockway Motor Truck Corp. reports for six months ended June 30, 1927, net income of $462,482 after interest, Federal taxes, etc., equivalent after 7 per cent dividend requirements, to $3.21 a share earned on 129,891 shares of no par common shares now outstanding. The capital structure includes $250,000 first serial 6's outstanding, $1,300,000 7 per cent preferred stock outstanding and 129,891 shares of no par common, on a $3 annual basis, since July 1. Previously regular quarterly dividend of 50 cents a share with an extra 25 cents in cash and 2 per cent in stock was paid. Net earnings for the six months ended June 30, 1927, were 12.6 cents of every dollar of net sales, as compared with 10.9 cents in the calendar year 1926, and 10.3 cents in 1925.

Norwalk Tire & Rubber Co. reports for quarter ended June 30, 1927, net profit of $33,323 after expenses, interest and depreciation, equivalent after 7 per cent preferred dividend requirements to 8 cents a share (par $10) earned on 150,000 shares of common stock. This compares with net loss of $46,953 after above deductions in preceding quarter. Net loss of first six months of 1927 totaled $13,630.

Industrial Acceptance Corp., which handles time sales for Studebaker dealers exclusively, reports earnings for the first six months of 1927 of $561,640 against earnings of $1,004,819 for the full year of 1926. After reserve for taxes and after dividend requirements on the first preferred stock, the balance available for dividends on the common was $1.35 a share.

Borg & Beck Co. reports net profit for July of $88,612 against $50,912 in July, 1926, after all charges. For the first seven months of the year, the net profit was $605,719, against $505,657 in the same period last year. President Borg announces that the company has purchased 1000 more shares in the open market, making the total holdings 11,000 shares of the 125,000 outstanding.

Mullins Body Corp. reports July net profit of $51,398 after depreciation and all charges, comparing with $32,340 in July, 1926. Earnings in July, 1927, are after absorbing considerable expense in new development work.

Chandler to Use Trophy

CLEVELAND, Aug. 15—An emblem reproduced from the gold cup trophy won by Chandler-Cleveland Motors Corp. in a record-breaking climb of Mount Wilson in California will appear on the radiator of all 1928 series Chandlers. The device is in the shape of a shield outlined in gold. The loving cup is embellished on the shield.

Studebaker Wins Award

SOUTH BEND, Aug. 15—Word has been received by Studebaker Corp. of America, of the awarding of first prize among stock cars to its President model at the Milan, Italy, automobile salon, for beauty and elegance of its body work.

September Outlook Cheers Steel Mills

Volume to Date Still Short of Expectations—Buying Incentive Lacking

NEW YORK, Aug. 18—Volume of business placed by automotive consumers still falls far short of steel producers' expectations, but there is much optimism regarding September prospects. In the steel market the backwardness of commitments is generally ascribed to the peculiar conditions that surround the passenger motor car industry at this time, but the thought is voiced that some consumers make no greater effort to anticipate steel requirements because all incentive is lacking.

Recent price advances in sheets have not yet had a comprehensive test, and in their support the far-fetched argument is being used that automotive sheet consumers are reluctant to bring pressure to bear on prevailing prices because of the untoward effect lower steel prices would have on mill wage results, resulting in the lowering of the motor car purchasing power of the affected operatives.

All that can be said of the sheet market, by way of facts, is that prices are steady for what business comes out and that mills are operating at approximately 70 per cent of capacity.

Pig Iron—The Valley market for foundry and malleable iron is a fraction lower, now being quotable at $17.50 @ $18. Demand from automotive foundries is light. Producers are striving hard to lift the market out of the rut.

Aluminum—Latest statistics show that relatively heavy imports have added considerably to the supply, and bonded warehouse stocks, which for a time appeared to be dwindling, are now thought to be quite heavy. For all that the market is steady and what little foreign metal is moving into automotive consumption is sold at very close to the domestic producer's price. Remelted metal is easy.

Copper—Domestic consumers are buying in light tonnages, latest statistics supporting such a policy. Producers are reluctant to shade prices. Demand for automotive brasses is slow.

Tin—Consumers have covered nearby demand at fairly advantageous prices, and current consuming inquiries are light.

Lead—Some storage battery manufacturers have had to come into the market for prompt shipments. Generally speaking, the market is steady and quiet.

Zinc—Reduced production, smaller stocks and increased shipments make for a firmer tone in the zinc market.

Commerce Yearbook Out

WASHINGTON, Aug. 13—The Department of Commerce announces that its 1926 Yearbook is now ready for distribution and that copies may be had for $1 by writing to the Superintendent of Documents, Government Printing Office, Washington. The book is an official compilation of facts and figures relating to U. S. economic life.

Ayres Says New Ford Halts Steel Pick-up

CLEVELAND, Aug. 15—"Our prosperity seems to be getting tired," Col. Leonard P. Ayres, vice-president of the Cleveland Trust Co., announced in his monthly business review bulletin. "It is showing symtoms of fatigue. It may recover its earlier vigor later on, but at present it is unmistakably slowing down," he continued.

Colonel Ayres in his comment on iron and steel said that the low point in production had been reached and now is at an end. He noted that it didn't seem likely that the autumn pick-up would be as good this year. "It is due chiefly to the hesitancy in the automobile industry, and particularly to the lull due to the change of Ford models," he said.

National Metal Week Opens September 19

DETROIT, Aug. 16—Marking the tremendous educational significance of the meetings of four technical associations in Detroit in conjunction with the Ninth Annual Steel Exposition, the week of Sept. 19 is to be observed as National Metal Week throughout the country, and particularly in the industries producing and interested in iron, steel and other metals.

Simultaneously with this announcement, the secretary of the American Society for Steel Treating, which is sponsoring the exposition, made known the fact that the show spaces had been practically exhausted. Only five spaces remain unassigned, and there is every reason to believe that demand will exceed the supply.

Canadian Exports Lower

WASHINGTON, Aug. 18—Exports of automobiles from Canada the first half of this year increased 2 per cent in value but declined 7.4 per cent in unit numbers in passenger cars and 5.2 per cent in unit numbers in trucks, compared with exports the first six months of 1926, according to figures furnished the U. S. Department of Commerce, by the Canadian government. Passenger car exports totaled 25,325 units. Truck and bus exports totaled 10,760 units.

Doble Heads Company

PHILADELPHIA, Aug. 17—In a recent issue, Abner Doble was referred to as former president of the Doble Steam Motors Corp. Mr. Doble is active head of the company, which is operating in California.

Missouri Railroads Protest Bus Lines

Heavy Losses in Short Haul Traffic Cited Before Regulation Commission

KANSAS CITY, Aug. 15—Vigorous protests against the licensing of competing bus lines is being waged before the Missouri Public Service Commission by railroads operating in the state. The last legislature placed the licensing of bus and truck lines in the hands of the commission. The law now is effective and the commission is holding hearings on more than 40 applications.

The railroads are contending that the bus lines that operate in direct competition with the railroads have virtually eliminated the short haul business of the railroads.

L. A. Baltterman, general passenger agent of the Wabash railroad, testifying at a hearing on the application of the Yelloway Bus Lines, Inc., said that in the territory between Kansas City and St. Louis, where the railroad and the new hard surface highway parallel, the railroad's short haul business virtually had been eliminated and that the company, in the last four years, had lost 22 per cent of all its short haul passenger business.

H. H. Butler, assistant passenger agent of the Missouri Pacific lines, said his company had lost 32 per cent of its short haul business in Southwest Missouri where the Brown Bus Company operates.

The Burlington railroad, the Rock Island and the Chicago & Alton, also appeared before the commission by counsel, protesting the licensing of certain bus lines. There also is competition among the bus companies for the exclusive right to operate in certain sections.

Form New Coast Line

SACRAMENTO, CAL., Aug. 16—Triangular airplane passenger and express service, between Sacramento and Los Angeles, via Fresno and other inland towns in the San Joaquin Valley, and San Francisco on the coast, is announced to start in September, by the Valley Air Service, Inc., of Sacramento. Five Fokker planes have been purchased and are being equipped with Wright Whirlwind motors, according to Major J. Spaulding Edwards, head of the new corporation.

To Operate Tunnel Buses

NEW YORK, Aug. 15—The operation of 15 buses through the new Holland vehicular tunnel, connecting Jersey City and New York, by the Nevins Bus Lines, has been approved by the New Jersey Public Utilities Commission. The buses will operate from Journal Square, Jersey City, to the Canal St., New York, end of the tunnel.

Mexican Car Imports Show July Increase

LAREDO, TEXAS, Aug. 15—Notwithstanding the depressed economic condition of Mexico, automobile sales are keeping up remarkably well, as is shown by the export record of this port of entry. During the month of July a total of 53 freight cars of automobiles were shipped into Mexico through here. The number of automobiles in these cars was approximately 340. The exports for June were 51 cars, containing approximately 325 automobiles. The shipments for August promise to show a slight increase over those for July. It is stated that the exports through Laredo comprise approximately 80 per cent of the total exports from the United States to Mexico.

One of the significant features of the automobile trade in Mexico, according to dealers, is the marked falling off in orders for European cars. The sale of cars, other than those of American manufacture, is so little as to be no longer a factor of the automobile trade in Mexico, it is asserted.

Boston to Hold Plane Show

BOSTON, Aug. 15—Beginning Sept. 26 and continuing until Oct. 1, Boston will have the first aviation exposition ever held in New England. It is to be combined with a radio exhibition, but aviation is to be a big factor. The Aeronautical Chamber of Commerce of America, Inc., has approved and endorsed the exposition and many leading manufacturers of commercial aeroplanes will be represented.

Columbus Merchants Back Parking Garage

COLUMBUS, Aug. 15—The second large ramp garage, designed to take care of the large number of automobiles in the downtown business section, will be started soon by the Columbus Merchants Garage Co., backed by leading retailers of Columbus. It will care for 800 cars on the six floors besides 200 additional cars on the roof.

Postponement Declined of Schneider Cup Race

WASHINGTON, Aug. 15—Request of this government for a postponement of the Schneider Cup Race in Italy has been denied and the race will be held on Sept. 25, regardless of the fact that the United States may not have an entry, according to cable received this week by the Bureau of Aeronautics of the Navy Department.

The postponement was asked because of injury to Lt. Al Williams' plane. The race will be held at Venice. The Air Club of Italy announced that the postponement could not be granted because England refused to consent to a change in the date. The Italian team won the 1926 race at Hampton Roads and for that reason had the privilege of naming the date and place of the 1927 race meeting.

Supercharged Delage Wins Spanish Prix

PARIS, Aug. 1 *(by mail)*—Driving the 91½ in. supercharged Delage with which he captured the French Grand Prix on Montlhery track a month ago, Robert Benoist won the Spanish Grand Prix at San Sebastian, yesterday, with an average of 80.5 miles for the distance of 430 miles. Count Conelli, on a supercharged Bugatti, was second, 2 min. 17 sec. behind the winner, and Bourlier on a Delage was third. Seven cars were entered—three Delages, three Bugattis and a Maserati.

Two other races were held in connection with this gathering. A 12-hour race for any type of stock car was won by Rost on a 122-in. Georges Irat, his distance being 748.1 miles. Rigal on a sleeve-valve Peugeot was second with 738.6 miles; Brisson and Block on a six-cylinder Lorraine Dietrich third with 728.5 miles, and Laly and Chassagne on 183 in. Aries fourth with 712.3 miles.

A 430 mile free-for-all race was won by Materassi on a 122-in. superchaged Bugatti, with an average of 78½ m.p.h. The four following positions were taken by Bugatti cars. In the 68 cu. in. class the winner was Martin on a six-cylinder roller bearing supercharged Amilcar.

Ohio Buses Carry 26,000,000

CLEVELAND, Aug. 13—Reports compiled here show that intercity bus lines of Ohio in 1926 carried 26,000,000 passengers. About 275 bus companies reported.

Calendar of Coming Events

SHOWS

American Electric Railway Association, Public Auditorium, Cleveland..Oct. 3-7
American Road Builders Association, Public Auditorium, Cleveland..Jan. 9-13
Automotive Accessories Association, Armory, Chicago .....Nov. 7-12
Automotive Equipment Association, Coliseum, Chicago .....Nov. 7-12
*Chicago, National Automobile Chamber of Commerce, Coliseum Jan. 28-Feb. 4
International Aircraft Show, Berlin March 23-April 11
International Aviation Exhibition, Copenhagen .....Aug. 20-Sept. 2
Lille, France, Exposition....Nov. 20-Dec. 4
London Passenger Car Show....Oct. 14-22
London Truck Show .....Nov. 17-26
Machine Tool Exhibition, New Haven, Conn. .....Sept. 6-9
Machine Tool Exposition, National Machine Tool Builders' Association, Public Auditorium, Cleveland Sept. 19-23
National Air Races, Spokane, Wash..... Sept. 23-24
National Standard Parts Association, Convention Hall, Cleveland..Nov. 14-18
National Steel and Machine Tool Exposition, American Society for Steel Treating, Convention Hall, Detroit, Sept. 19-23
*New York, National Automobile Chamber of Commerce, Grand Central Palace .....Jan. 7-14
Paris, Grand Palais .....Oct. 6-16
Salon, Automobile Salon, Inc., Hotel Drake, Chicago .....Jan. 28-Feb. 4
Salon, Automobile Salon, Inc., Hotel Biltmore, Los Angeles.....Feb. 11-18
Salon, Automobile Salon, Inc., Hotel Commodore, New York..Nov. 27-Dec. 3
Salon, Automobile Salon, Inc., Hotel St. Francis, San Francisco Feb. 25-March 3

*Will have special shop equipment exhibit.

CONVENTIONS

American Chemical Society, Detroit, Sept. 6-8
American Electric Railway Association, Public Auditorium, Cleveland..Oct. 3-7
American Institute of Mining & Metallurgical Engineering, Metals Division, Book-Cadillac Hotel, Detroit .....Sept. 19-23
American Road Builders' Assn., Hotel Hollenden, Cleveland .....Jan. 9-13
American Society of Mechanical Engineers, Machine Shop Practice, New Haven, Conn. .....Sept. 7-9
American Society of Mechanical Engineers, First National Fuels Meeting, St. Louis .....Oct. 10-13
American Society for Steel Treating, Convention Hall, Detroit....Sept. 19-23
American Welding Society, Book-Cadillac Hotel, Detroit.....Sept. 19-23
Automotive Electric Association, Buckwood Inn, Delaware Water Gap, Pa. .....Sept. 12-14
Automotive Equipment Association, Coliseum, Chicago .....Nov. 7-12
International Congress for Testing Materials, Amsterdam .....Sept. 12-17
Motor and Accessory Manufacturers Association, Credit, Detroit..Sept. 14-16
National Association of Finance Companies, Congress Hotel, Chicago Nov. 14-15
National Hardware Association, Marlborough-Blenheim, Atlantic City Oct. 17-20
National Safety Council, Stevens Hotel, Chicago .....Sept. 26-30
National Standard Parts Association, Hotel Hollenden, Cleveland..Nov. 14-18
National Tire Dealers' Association, Louisville, Ky. .....Nov. 15-17
World Motor Transport Congress, London .....Nov. 14-17

S. A. E.

National

Aberdeen Proving Ground, Oct. 6—Joint meeting with Army Ordnance Association.
Chicago, October—National Transportation and Service Meeting.
Chicago, Dec. 1—Tractor Meeting.
Cleveland and Detroit, Sept. 19-22—Production Meeting.
Detroit, Jan. 24-27—Annual Meeting.
New York, Jan. 12—Annual Dinner.
Spokane and Chicago, week of Sept. 19—Aeronautic meeting.

Sectional

Milwaukee, Oct. 5—First Meeting.

RACES

Altoona, Pa. .....Sept. 5
Atlantic City .....Sept. 5
British Grand Prix, Brooklands....Oct. 1
Charlotte, N. C. .....Sept. 19
Detroit .....Sept. 10
Los Angeles .....Nov. 24
Milan, Italian Grand Prix .....Sept. 4
Salem, N. H. .....Oct. 12
Syracuse, N. Y. .....Sept. 3